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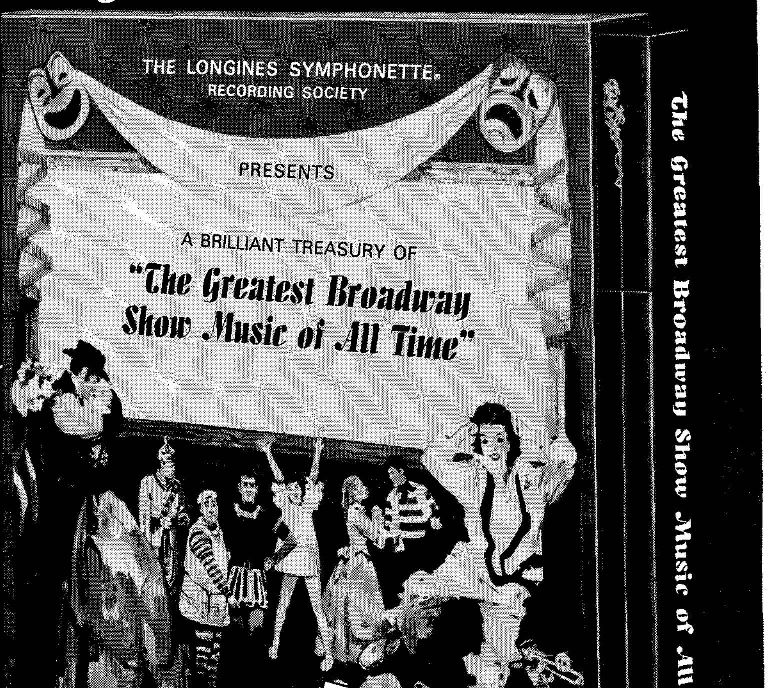
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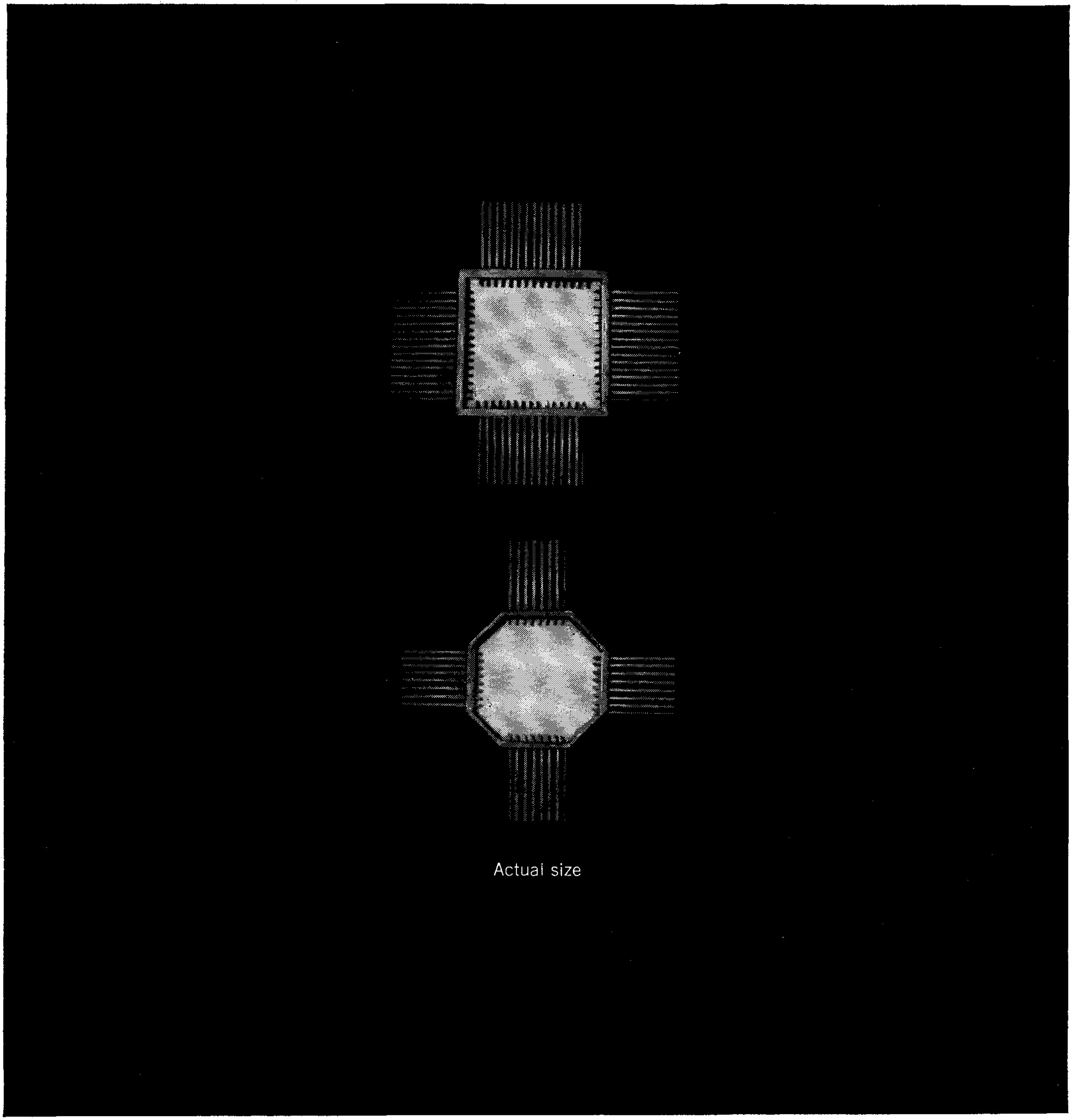

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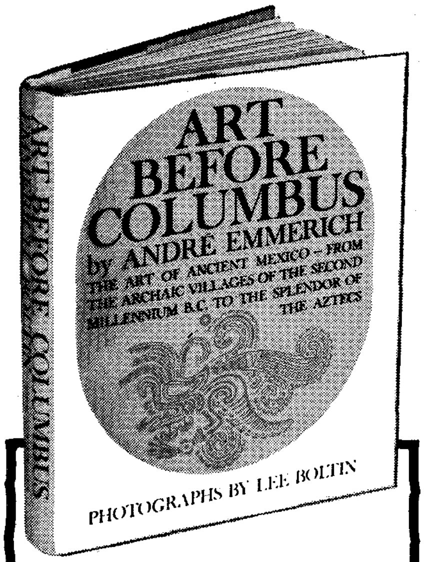
ART BEFORE COLUMBUS
by ANDRE EMMERICH
THE ART OF ANCIENT MEXICO - FROM THE ARCHAIC VILLAGES OF THE SECOND MILLENNIUM B.C. TO THE SPLENDOR OF THE AZTECS
PHOTOGRAPHS BY LEE BOLTIN
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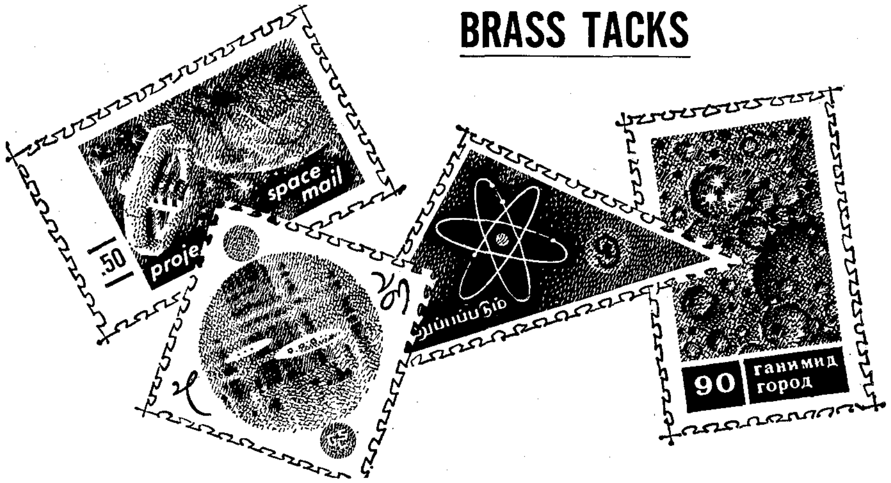

BRASS TACKS

Dear Mr. Campbell:

I have read with great interest your editorial in the Analog for April, entitled "God Isn't Democratic." Some points you make are excellent, notable among them the fact that the pioneers did not come here to set up a democracy, and that the democratic bias is in its tendency both anti-religious and anti-scientific. But I think you are going too far when you say that the Court correctly interpreted the attitude of the American people in banning public worship, either by prayer, hymns or Bible-reading, however nonsectarian, from public schools. The Gallup poll, I think it is, shows 70% opposed to the Court's decision, 24% favorable, and only 6% undecided. Some church people, to be sure, support the Court's decision for some peculiar reasons of their own, notably the Presbyterians and the Baptists. Ninety-five per cent of the people still profess some religious belief or affiliation, and the proportion of church membership still continues quite high. It is a curious fact that a hundred years ago church membership was much less widespread than today, yet such a decision by the Supreme Court would then have been unthinkable. It does seem queer that the true meaning of the First Amendment should have escaped the Founding Fathers and the entire country until recently, and it should have been left for eight supernally enlightened wiseacres to set us all straight about it. I know that when I went to high school we had the Lord's Prayer, a Psalm, and nonsectarian hymn-singing, in which Catholics, Protestants and Jews all joined. If atheists objected, they were doubtless excused from taking part, but otherwise they had no influence.

I think you'll find that there'll be a new Constitutional amendment enacted to make it clear that if local authorities or state authorities prefer to have some religious exercises in public schools, they have the right to have it; and that the country is historically favorable to the general principles of religion which all sects hold in common. It seems to me that beyond any doubt the authority of the Federal government and thus of the Supreme Court simply does not extend over such matters, and was never intended so to extend. The eight Supreme Court judges deserve to be removed from office by Presidential authority for a flagrant breach of the Constitution. I don't expect that will happen, to be sure, and therefore the Amendment must be enacted.

You'll find the enclosed pamphlet

most interesting and pertinent. In spite of large church membership, the general waning of religious influence along with the rise of democracy seems undeniable. One important influence is that the popularization of the automobile has made sexual immorality more easy and widespread than ever before, and since religion continues to condemn such immorality, religion is dropped by those who can't or won't give that up.

CLARENCE HOTSON, Ph.D.

Yale Farm Road
Romulus, New York

The trouble with figures on church membership is largely "I don't care what you SAY; what do you DO?" Faced with a printed form to be filled in asking "Religious Affiliation" it's easier to write in some creed than to explain "Agnostic."

Dear Mr. Campbell:

Two items in the April issue caught my attention.

1. Your comments on A. Hexter's letter contain an inaccurate assertion. You claim Yucatan—northern area where Chichen Itza is located is NOT dry and windy. I hate to differ, but you are quite wrong. It is extremely dry and windy and, as a matter of fact, hot. The only vegetation is scrub brush and the only water to be found is below the surface of the ground or in hollowed out cenotes in the limestone. It is not malaria country by any means.

However, both you and Mr. Hexter betray a lack of knowledge about the Maya. Chichen Itza is not really a Mayan culture in the full sense. It appears to be the result of an invasion or something of the sort from the Valley of Mexico. The monuments and architecture at Chichen Itza are very similar and even identical to those found in the Toltec city of Tula near modern Mexico City. The greatest of the Mayan cities of the earlier pure Mayan classical period are in the heart of the malarial rain forests south of the modern Yucatan. They include large areas of the jungles of British Honduras, Guatemala and Mexico.

continued on page 89

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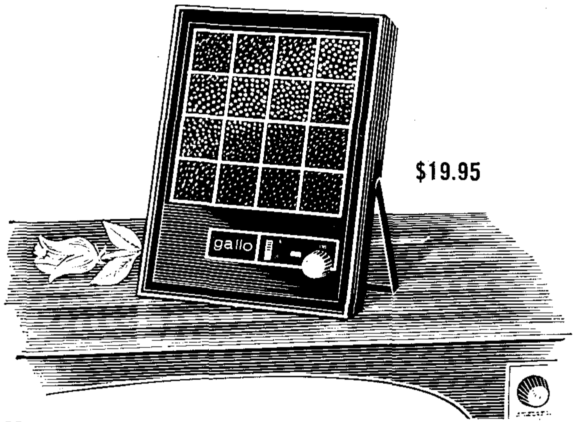

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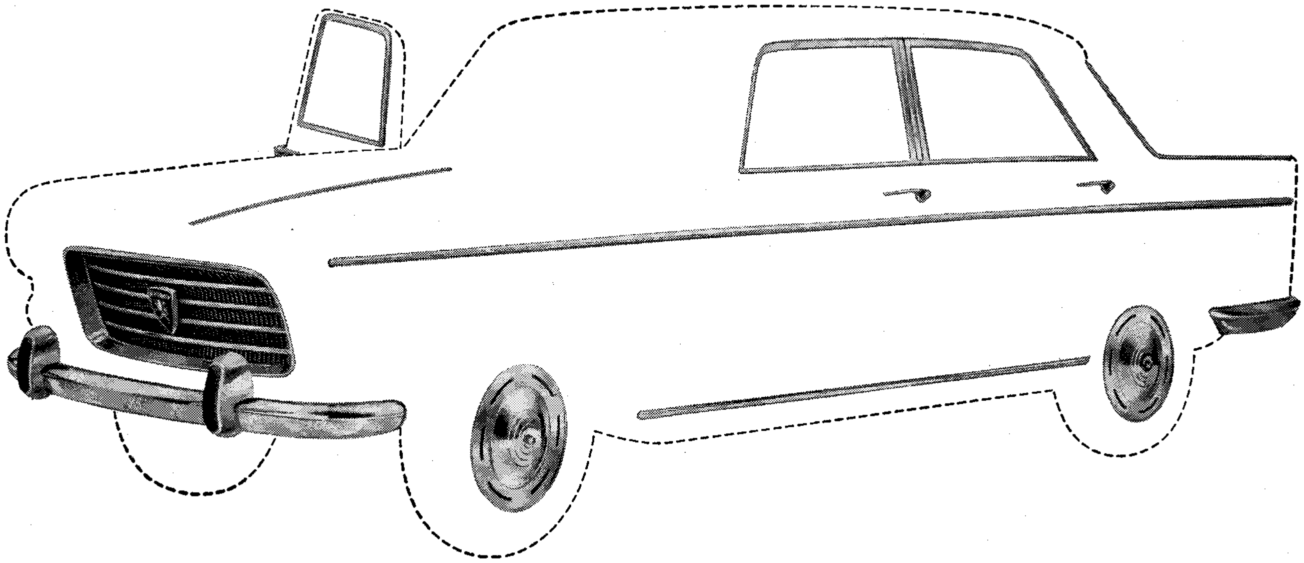

(it's indestructible)

Peugeot doesn't go in for trim for its own sake. What trim there is has a definite function. And what trim there is, is stainless steel, because it lasts far longer than chrome. That includes bumpers, grill, body trim and wheel covers. They'll all last indefinitely.

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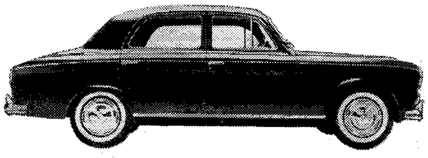

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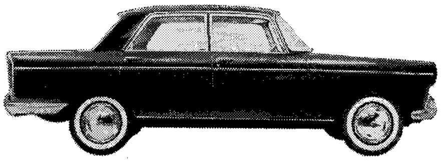

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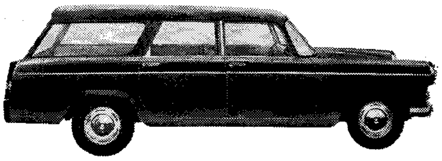

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the barbarian menace

■ A few months back I discussed here the effect that marching, counter-marching, and round-and-round marching barbarian armies had had on human history. They provided Mankind with one of those great "educational opportunities"—education on the "Learn—or drop dead!" basis. This educational technique does not, of course, help the individual greatly, nor is it ever popular with the educatee, his group, or his descendants.

But education is a very strange thing. Everybody wants to *have* one, but the resistance to getting one, or having one forced upon you, is remarkable, considering how highly the thing is regarded. Practically everyone is certain that more education is just what the other guy needs to be given—but the wish for personal education is almost invariably of the form "I wish I had had . . ." The pluperfect tense—not the present-intentional, or the immediate-future tense. It's much more popular to sigh about the fact that education didn't happen years ago than to do something about getting it now.

Education is something everyone wants in his past—and is resisted from "stubbornly" to "violently" in the present. "I haven't the time, now . . ." is the standard excuse. Neither does a ten-year-old; just ask him. He has all those ball games to take care of, and the fishing to attend to, and a great many other important things that he needs to do. It's only that he's enslaved* by adult task-masters that forces him to acquire what he doesn't want.

While people look back on those horrid, awful, wicked times with loathing . . . they are enjoying the benefits conferred on us by those barbarian tactics. The barbarian armies culled out those individuals who could not learn—who did not have the flexibility that made possible a reorientation in adult life. Any cub, pup, or child can learn a new way of life; they obviously have to, for any way of life is new to them. The far more difficult thing is to learn a different way of life after you've learned one—for the Old Dog to learn new tricks. For the individual brought up as a Christian to be able to learn the new set of values the Moslem army insists on—or for the brought-up-Moslem individual to learn the values system of the Crusaders-with-swords.

This is, of course, a highly effective selective breeding system—whether the barbarian armies so intended it makes no difference whatever. It selectively bred for the characteristic of educability-and-flexibility in the descendants of the conquered peoples. And inasmuch as *no* people ever remained permanently unconquered, every group in the marching-barbarian-armies system was, repeatedly, in the class "conquered" often and long enough to be repeatedly and thoroughly culled over for elimination of the uneducable.

Please note carefully: I'm *not* saying "This is the way it should be; this is what I recommend!" I'm saying "This is *in fact what observably* happened."

We hear a lot of yak about behavior characteristics, mental and phychological characteristics, not being genetically heritable. This is absolute, and completely stupid nonsense; watch the courting patterns of various birds, for instance. Or the behavior of salmon in returning to their native stream. The migration patterns of hummingbirds, or the nest-making pattern of the paper-making wasp. Each displays very specifically inherited *behavior* patterns—not merely physiological patterns.

In bees, there is an additional inherited-pattern system demonstrated;

continued on page 93

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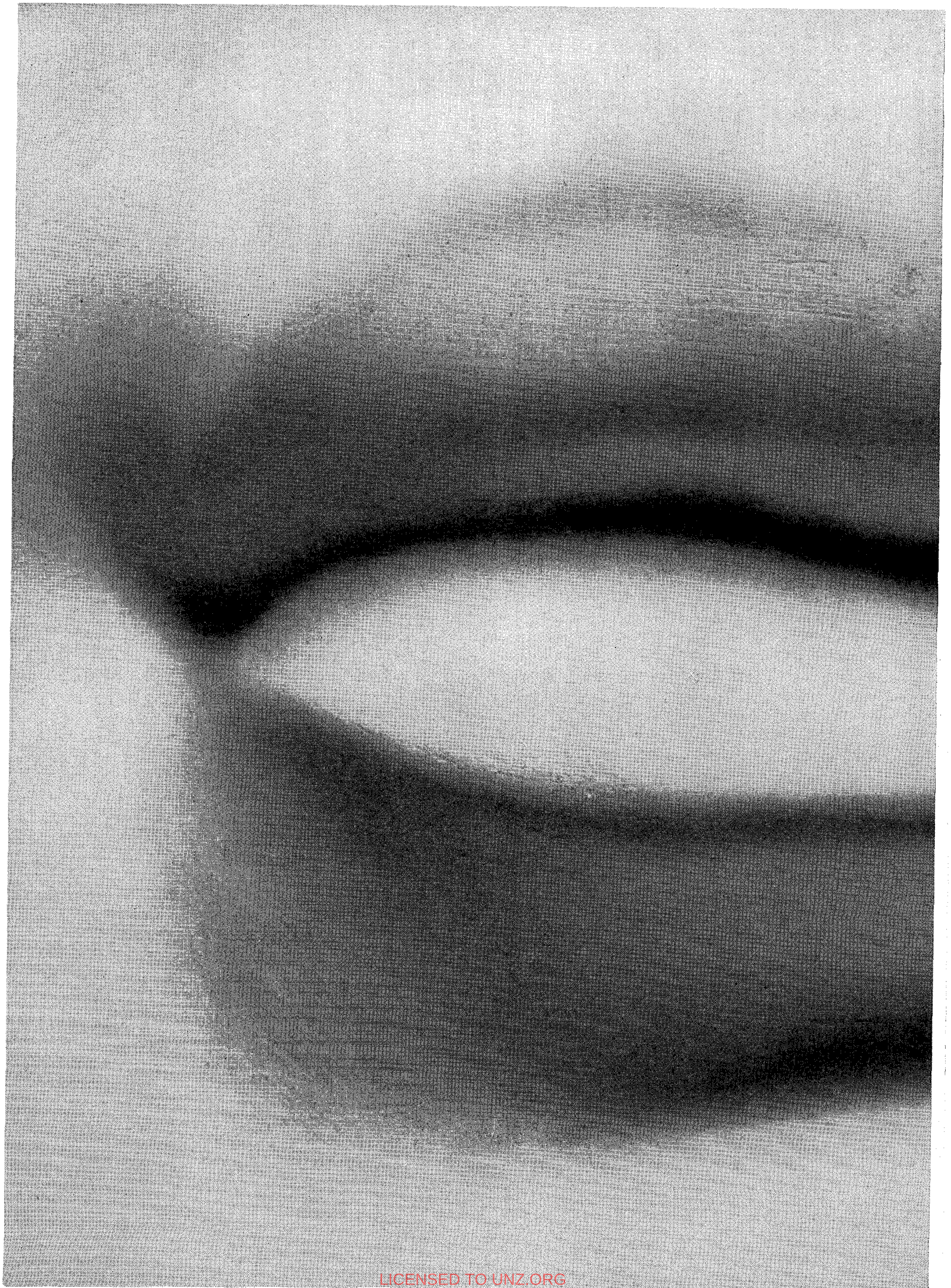
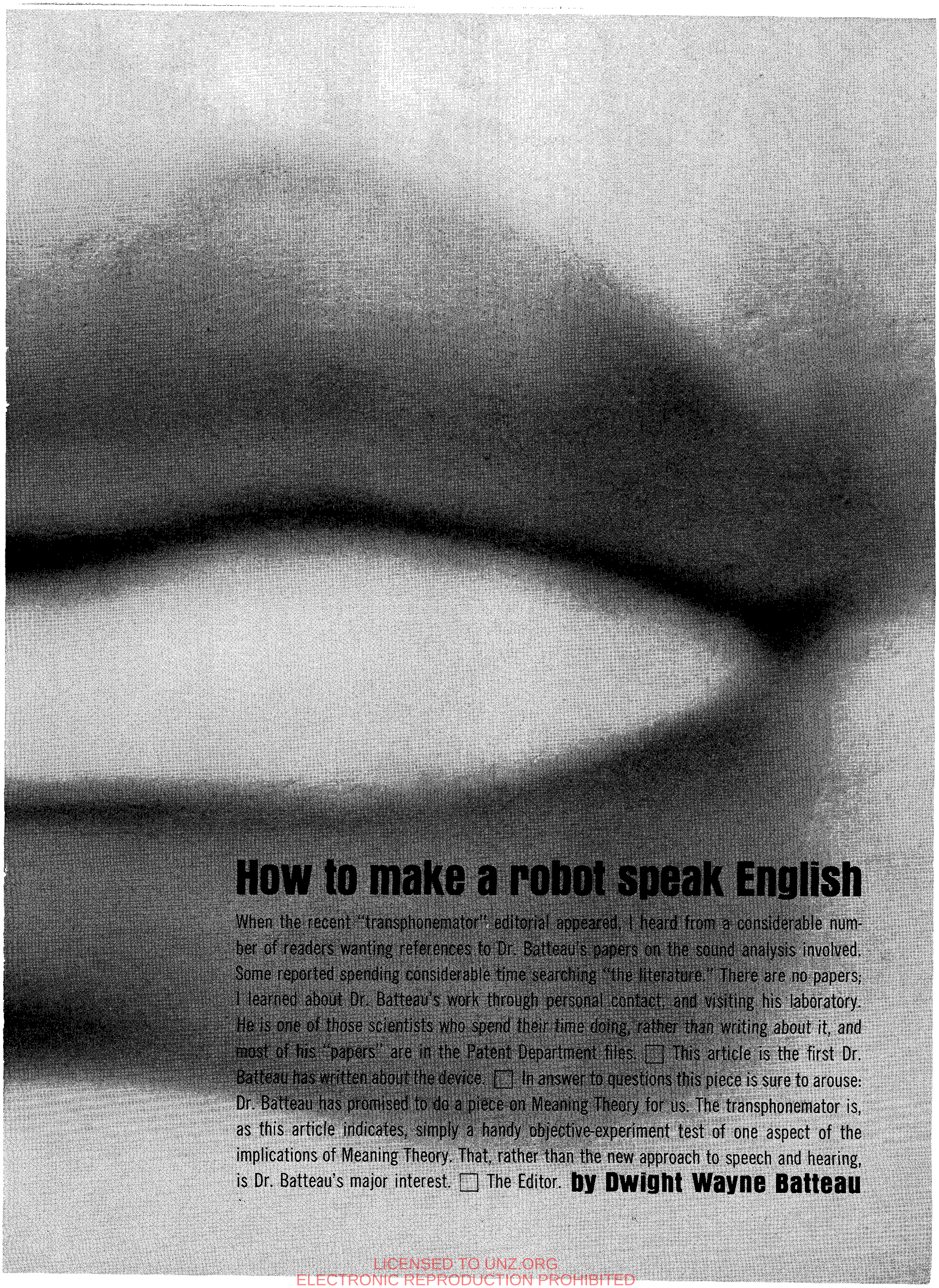
*One of the commonest definitions of slavery is "being forced to labor at tasks not of your own choosing, under threat of physical punishment, while being unable to escape. If the slave escapes, he will be arrested and forcibly returned to his master." The *child is enslaved!*

EDITORIAL BY JOHN W. CAMPBELL





How to make a robot speak English

When the recent "transphonemator" editorial appeared, I heard from a considerable number of readers wanting references to Dr. Batteau's papers on the sound analysis involved. Some reported spending considerable time searching "the literature." There are no papers; I learned about Dr. Batteau's work through personal contact, and visiting his laboratory. He is one of those scientists who spend their time doing, rather than writing about it, and most of his "papers" are in the Patent Department files. ☐ This article is the first Dr. Batteau has written about the device. ☐ In answer to questions this piece is sure to arouse: Dr. Batteau has promised to do a piece on Meaning Theory for us. The transphonemator is, as this article indicates, simply a handy objective-experiment test of one aspect of the implications of Meaning Theory. That, rather than the new approach to speech and hearing, is Dr. Batteau's major interest. ☐ The Editor.

by Dwight Wayne Batteau

The original and a copy for use underwater of a device developed by several million years of research, technically a computer steered array, simply a device for locating sound when used with a mind. The original is the property of Roland L. Plante, engineer in acoustics for United Research Inc.

■ Perhaps I should first say that we have made a robot speak English, so that we are able to separate conjecture from fact. The first sentence spoken was, "Oh, DeHart," and since Colonel DeHart is one of our associates in research, it seemed most appropriate that such a meaningful phrase was the first to come from a test program. Also, in order not to be unintentionally misleading, may I tell you that the voice was generated by a device, somewhat smaller in volume than my fist, made from ordinary transistors and electronic parts and that the test program was generated with a diode and a sine-wave generator? If we wish to discuss machine philosophical discourse, that is another topic, and one of great interest, to be pursued another time.

Having violated the advice to Alice to begin at the beginning, and having begun at the end, I apologize and hasten to mend my error.

Can you imagine sitting by the seashore and listening to the waves? If you can, now imagine that the sound of waves along the shore is talking to you. The sounds might say, "In front of you is sandy, sloping beach, but far over to the right is an outcropping of rock, and there is a quiet cove on the left." And you might also imagine that, whatever the weather, the waves speak of those same features. One time in a loud, wild voice, another time in a soft, gentle voice, but always of the same shore.

Now can you imagine wind in a forest, and the sounds tell of leaves and branches, of large and small trees, and of the brush and forest floor. The sound from the floor is a quiet sound, the trunks of the trees are columns of whispers, and the leaves are a flutter and rustle of sound. Again, no matter the weather, whether rain or wind, the sounds tell of the same forest, and the voices may change but the message is the same except as the seasons change the character of features of which the whispers comment.

These are not merely romantic imaginings; they are facts for the observing. Doesn't your kitchen sound like your kitchen, and your living room sound like your living room? Isn't the office of one character to be heard and the neighborhood bar another? Not by reason of the sounds of voices, footsteps, and movement alone, but by reason of what the rooms do to the sounds which fill them. Movie sound men have been aware of this for decades, and always tape silence on the set, the "presence" of the set, for dubbing if necessary. Inescapably, each feature of our environment modifies the sound of nature in its own way, which we may hear, if we listen.

Now think of the human vocal tract as a room of mobile walls, and that the shape and substance of the room can be heard when filled with sound. And this whether by whisper, shout, or song. Or by a buzzer, a belch, or an electronic reproduction of a train. Isn't it clear that the particular sound is of lesser importance than what the structure does to the sound? We may say that sound is *transformed* by the vocal tract, and that the resultant sound carries the marks of having been there. May we not then say, that to make a robot speak English, we must show him how to make the marks of the human vocal tract on sound?

It has seemed strange that a system of communication so common and so easily used as spoken language has defied meaningful analysis and simple synthesis for so many years. And even now, millions of dollars are being spent and roomsful of equipment are being employed to belabor the point that speech analysis and synthesis have been evasive. "Perhaps the approach is wrong," some heretic might say. For very human reasons, this suggestion must be avoided, but two simple beliefs have pinned research to a dogged futility in this area.

The first belief is known as "Ohm's law of acoustics." This rule states that phase relationships among frequency components are irrelevant to what a man hears. And this in face of the fact that white noise and Dirac impulses differ *only* in phase relationships in the frequency components, the frequency power density spectra are the same: unity. This belief persists in face of theoretical production of two separate pulses from a single pulse by phase shifts alone, and in face of easily performed experiments which provide perceptible differences in sound by phase shifts alone.

The second belief is in resonance as a means of increasing power in a component of sound by passive linear means. The Helmholtz resonator is the classical culprit. A resonator placed in a sound field is said to reinforce the frequencies to which it is resonant, when no passive means can do more than *decrease* the power in a given component. A linear resonator can redistribute a component in time and space, but cannot by any stretch of the imagination generate power from nothing or the other components.

Do you believe these two things? Do you believe that phase relationships cannot be heard? Do you believe that a passive resonator can increase the sound power in the component to which it is resonant? If you do, you agree with most of us who received conventional training in physics in high school and college. And you are dead wrong. If you attempt both to solve a problem like speech and to maintain those beliefs, you must have immense wealth to squander. Both cannot be done.

Consider our sea, the forest, rooms, and the vocal tract again, and let us assume that only slowly does sound die of much entropy and give up its life to heat. None of the power can be increased, but it can be rearranged in time and space. And what else is information but arrangement, and what else is arrangement but phase? Well, now, that isn't really fair, for we must consider both time and space in the whole picture of phase. Sound makes diffraction patterns as well as does light, but not by interference is sound lost, only rearranged in time and space. So perhaps we should examine the arrangement of sound, or better yet, the rearrangement of sound by its environment, in order to understand.

Not too long ago, there was an article in Analog on pseudonoise, in which the rearrangement of a perfectly periodic structure, so far as zeros was concerned, was such as to give a negligible output from a resonant circuit. An example of a sine wave, switched according to the code at its zeros, was given in illustration. Figure B1 is reproduced from that article. The response of a high Q resonant circuit to this signal is minute, but the pattern is only one of phase switching. Somewhere, somehow, there must be something important in the idea of rearrangement. (And a nervous system can be easily devised to break this code.)

Seeing the importance of arrangement and coding, it is not surprising that even the organizations engaged in research and maintaining those beliefs regarding phase and resonance have found it necessary to pulse *simultaneously* all the filters used in synthesis. Simultaneity is necessary only if phase relationships in the components is important. And in the search for "formant frequencies" produced by resonant reinforcement of the vocal pulse, the fact of inability to increase the sound power of components has been ignored.

So much for the negative side of speech research, and that only to indicate that two firmly implanted false beliefs are able to account for immense difficulties. Neither did we by wild-eyed act of genius deny authority and snatch truth from its nest. We merely observed and with what tools

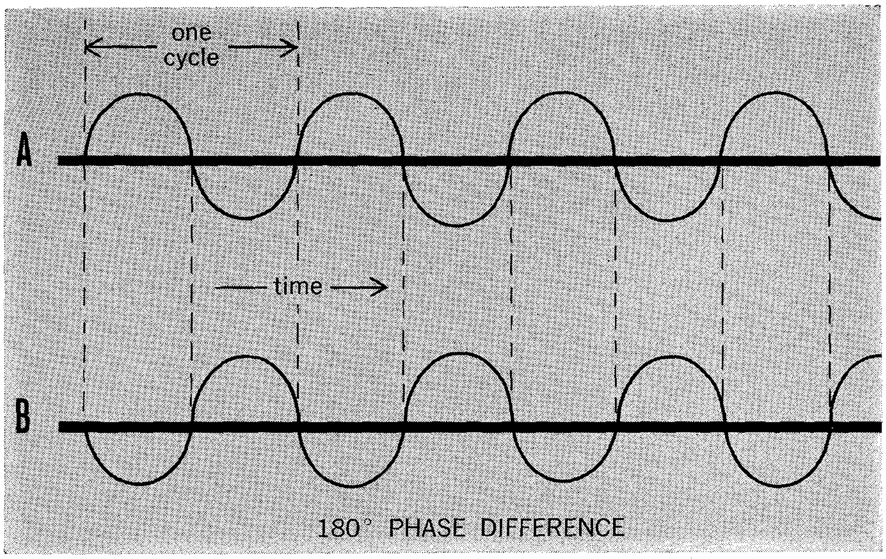


Figure B1

of mathematics and logic we could command sought the information content of the observation. It is unlikely that lacking background in the new sciences of information theory and meaning theory that anything new would have been accomplished. And without instruments of unusual fidelity, the patterning so easily perceived by human senses would have been missed. We needed the tools of mathematics and instrumentation most realistically.

Before we examine means of solution perhaps we should reexamine the problem. The question is, "What is speech?" Speech is produced by the relative rapid waggling of tongue, face, and throat to make an assortment of sounds. If one has a cold or holds the nose, the sounds change, but can still be understood. If one whispers, also the speech remains intelligible, though weak. If one clenches the teeth and speaks, the sounds are modified but intelligible. The ventriloquist gets along quite well with immobile face and active tongue and throat. Is not the last statement a key of some sort? What is producing the changing sounds of speech? The tongue and throat, of course, if that is all a ventriloquist uses. Ah, but he cannot say "boy" or "papa" very well. We concede, lips are needed there.

A man without a tongue cannot speak.

"A linguist speaks many tongues."

How interesting that our language itself contains the essential abstraction—for speech is related principally to the tongue. The modifications in sound which result in spoken words are transformations of the activity of the tongue. And, if we include the whole tongue, base, mid, and tip, perhaps that is all the activity needed. Oops, except for such sounds as "p," "b," "gee whiz," and so on. We do learn to concern ourselves with "attack" and "stimulus," but the tongue is now seen to have a dominant role in answering our question, what is speech, or how may the rocks and trees and vocal tract speak out?

Although the wave forms of speech as presented on the oscilloscope are more than familiar, perhaps two more will not be too many. In Figure 1a, the form of "ah" as voiced by the author is shown, and in Figure 1b, the wave form of "uh." The arrow in each photo points to a feature which may be observed to move smoothly in time relative to the beginning of the wave form as sounds in sequence eeh, ih, eh, uh, ah are voiced. And as that sequence is voiced a wrinkle in the tongue recedes further and further from the teeth. It seems as if the mobile feature in the oscillograms is related to the distance of the lump in the tongue relative to the teeth. This is not an absolute statement, but an observation. It may be observed further, that the back of the throat undergoes a sequence of changes as that series of sounds is voiced. If you hold your hand on your throat, just below the chin, you can feel the changes as they take place. The area is most tense and forward during "eeh" and relaxed and recedes as you proceed to "ah."

Now let us devise an oversimplified analog of our observation as shown in Figure 2. (An analog is a system carrying the same information—meaning theory.) A pulse applied as shown will be reflected from the partition and from the exit, and again from the partition, and from the rear wall, and the result will be a rattle of reflections, all eventually exiting at the "sound out" orifice. The result is a pulse multiply delayed and attenuated by reflections, but all time relationships *carry* the information of the position of rear wall, partition, orifice (carry information—a meaning theory term). The box itself may be known in all its features from the sound output if an inverse transformation can be constructed (meaning theory—definition of meaning). It is sufficient to characterize the

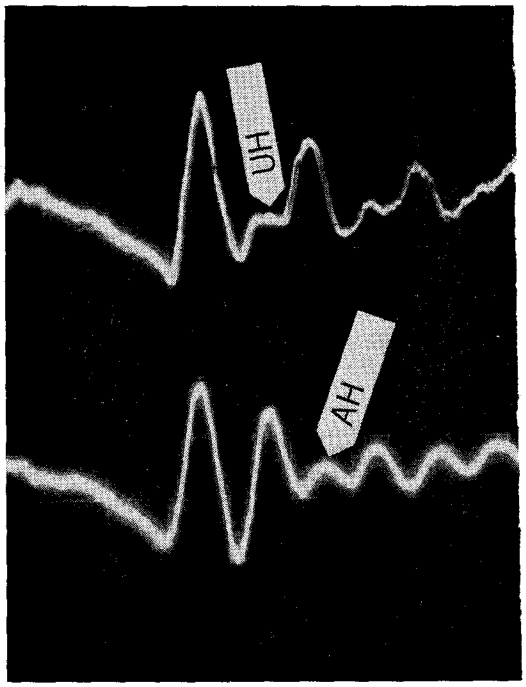


Figure 1. The sounds "ah" and "uh" as voiced by the author to show the location of the mobile feature.

positions to have the set of pulses shown in Figure 3.

In the analog of Figure 3, τ, is the time it takes sound to make the round trip from office to partition and back to orifice. It is shown reversed in sign because of the assumption of the character of the orifice. The time τ_2 is the time it takes the sound to make a round trip from rear wall to partition to rear wall and thence to the orifice. If the distance from rear wall to partition is d_2 and from partition to orifice is d_1, then

$$C\tau_1 = 2d_1$$
$$C\tau_2 = 2d_2$$
$$C \quad = \text{velocity of sound}$$

and the length of the box and the position on the partition are known. This is sufficient; continued reflections are redundant.

Using the analogs of Figures 2 and 3, let us show positions corresponding to eeh, uh, ah as derived from the model—relevance yet unknown.

It is easy to recognize the resultant output as a Pulse Position Code, or PPM form of modulation. If we form a hypothesis that speech is thus characterized, we are ready to attempt synthesis.

If the length of the box is fixed, it is necessary only to locate the "feature" in order to recognize the shape or identify the voiced sound. With this background, our first attempts at synthesis of speech in this manner were made with only two pulses, one for the index and one for the feature, and produced quite recognizable vowel sounds. If we wish to do so, the simplest way to make a robot speak English thus becomes a PPM code of two pulses. There are other considerations though, for example, if we are to have a dimensionless PPM code—the best kind—we need three pulses. Then the size of the box may vary and

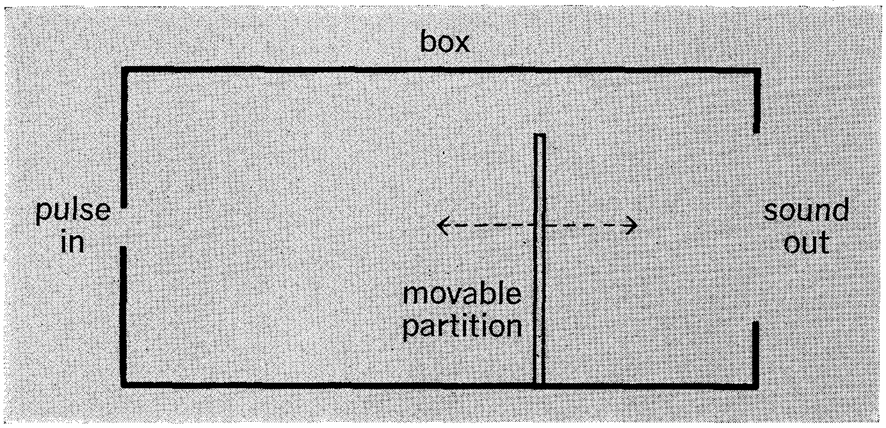


Figure 2. Simple analog of the mouth and tongue.

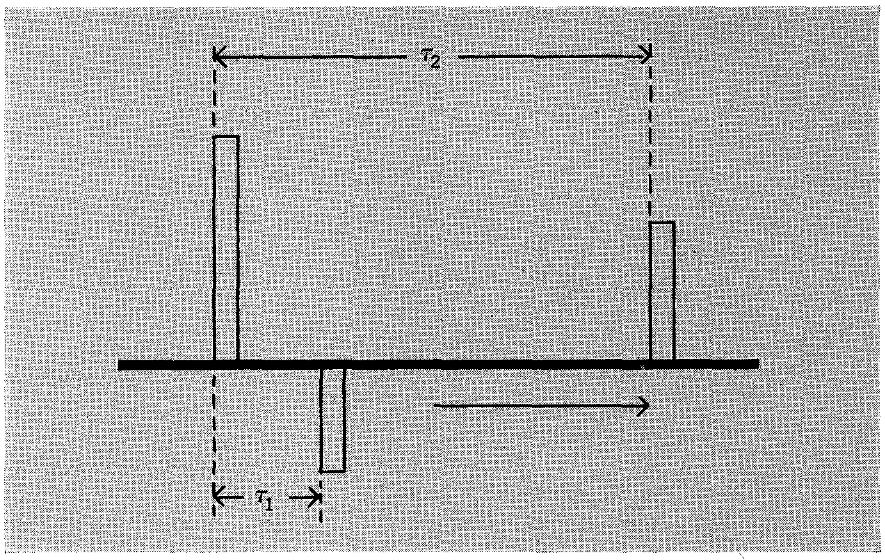


Figure 3. Characteristic of the box. The relative times τ_1 and τ_2 indicate the location of the partition.

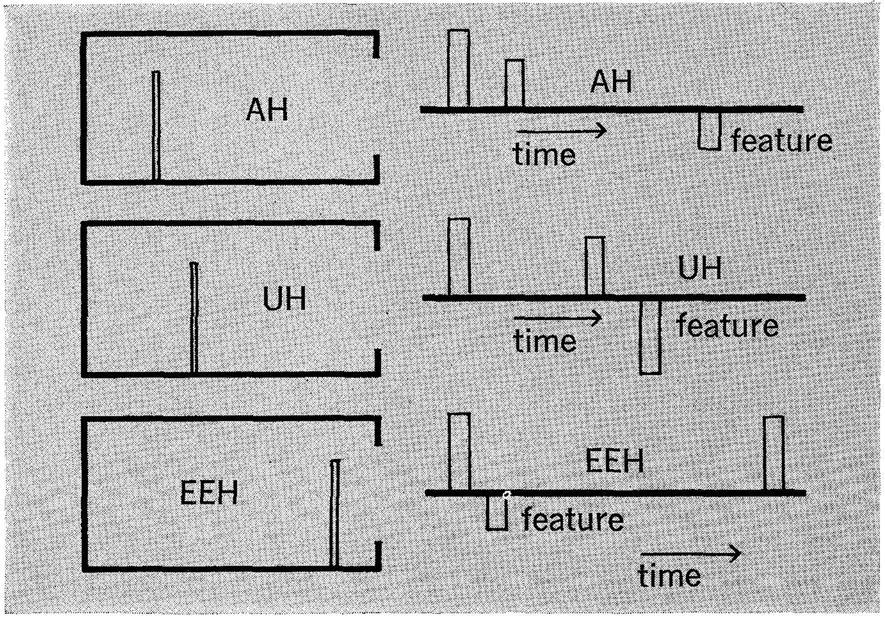


Figure 4. The box model as it might be used to make speech with a mobile feature.

yet so long as the shape is maintained the code remains invertible—recognizable. The ratio of the times becomes the base code number in this case.

It seems to me that the various ideas so blithely passed over may stand reviewing. In order to communicate a message it is necessary to have a dependable code of some kind so that the recipient of the message can know what the sender had in mind. The dot-dash of Morse code is both positional and durational, sequences of long and short signals and spaces giving the code. Suppose we look just at the end points of the Morse code for "a," Figure 5. The relative positions of the pulses in the third form of Morse identifies the letter. If we allow a variety of lengths to have a variety of meanings, we could devise a code such as the one shown in Figure 6. If we wish to have a coding which is reliable under a wide variety of conditions, we can produce a dimensionless code by coding in ratios. The length of time between positive and negative pulses divided into the time between positive and positive pulses provides the code as shown in Figure 7. The positive pulses provide a "clock." In the box waveform, the two positive pulses can provide the clock, while the negative pulse provides the related information. It is necessary that some reference clock or an equivalent measure be used if recorded speech is to be recognizable when played too fast or too slow, or when people of different size heads—such as children—produce equivalent speech.

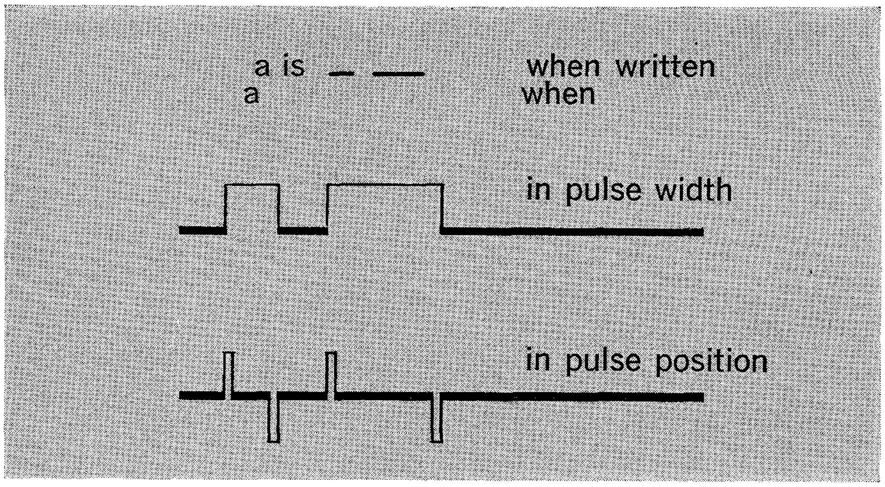


Figure 5. The Morse code for "a".

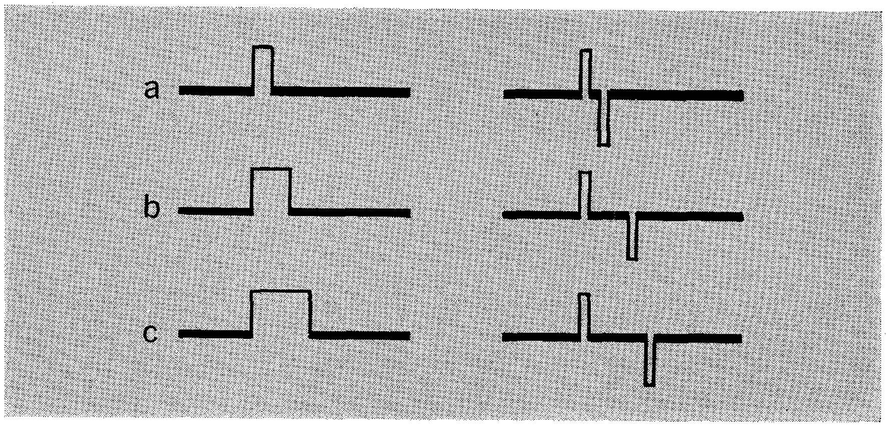


Figure 6. Coding by pulse length or position.

In an age of unlimited access to means of recording and altering sound, everyone has heard records played too fast and also too slow. It is easy to observe that a record of speech made to play at 45 rpm remains intelligible at 33⅓ rpm. And it is also easy to observe that speech recorded for 33⅓ rpm can be understood easily at 45 rpm. If one carries such observations further, it is easy to show that speed changes up to 2 to 1, either reduction or increase, remain intelligible. If this is true, there can be no characteristic frequencies of speech, at best there can be only characteristic ratios of frequencies of speech, since the ratios are preserved by speed changes in playback.

In the characterization which we are exploring, the shape of the box remains unchanged with speed changes, but the size of it varies. As the playback speed is increased, the box becomes smaller, and as the playback speed is decreased, the box becomes larger. However, it never varies in its shape, or the relative positions of orifice, partition, and rear wall, if some characteristic length is used as the factor of measurement. The partition, if halfway between orifice and rear wall, remains halfway between orifice and rear wall through all the speed changes. As speed is increased, the voice may become childish, corresponding to the child's smaller vocal tract, but the words do not change.

There are other clues to the process of shape preservation in the face of size changes. A third interval on the piano—or musical scale—remains in character regardless—within limits—of where it is played. The melody is unchanged by a change in key; the harmony is unchanged by a change in key. Perfect pitch is equivalent to the perception of size; relative pitch is equivalent to the perception of shape. A tiger sound may be made by a small tiger or by a large tiger, and the shape of the sound is important; the size may also be important. Think of sounds as having characteristic shapes, rather than characteristic frequencies, the nervous system appears to be shape oriented—vision, too.

We have also mentioned "meaning theory" several times, like van Vogt quoting null-A, and know very well that you probably have never even heard of it—but if you have long read

Analog and its precursors, you have met the Stupidtheorems from it. Just as Information Theory has its base in measures of differences and their likelihood of occurrence, Meaning Theory has its base in the transformations of information from coding to coding. Perception takes place by transforming information from the perceived to the perceiver; meaning takes place by *returning the information from the perceiver to the perceived.* The ham radio operator sends 73CUL and his friend perceives it; his friend says "What he meant was very best regards and see you later" thus returning the information to his friend and giving meaning to the message. "I know what you mean," is the common phrase. I derived the half way point from theory, and sometimes say "I heard what you said"—implying "meaningless, friend." If we are to give meaning to speech, we need not only the code perceived, but the cause of its construction. I say at this point, *enough, and on with the tale.*

Above all, for a hypothesis to become a useful theory, it must be consistent with past observations and produce newly predicted observables. Traditionally there are three formant frequencies in speech. How does our model relate to these? A sequence of three pulses defines three fundamental frequencies of components by the three spacings. Pulses p_1, p_2, p_3 have p_1p_2, p_1p_3, p_2p_3 combinations. Thus the single movable partition in the box produces signals of three frequencies, consistently enough, but there are only two meaningful ratios in either case. It should be instructive also to examine the result of multiple reflections. A beginning of a diagram of reflections is shown in Figure 8. The waveform observed is a result of the sum of all the reflections produced in the box, and may appear very complex indeed.

It seems to me that it may now be necessary to remind you that the box is an *oversimplified* model. The consequences of the model, however, are still applicable. We can think of the vocal tract as a structure of walls and partitions which produce reflections from the walls and through the partitions in times related to their positions relative to each other. The concept of "resonance" becomes one of "re-sonance" or multiple reflections, which, in an information-theory sense, is a redundance.

Redundances are very useful, they increase the confidence in the message, but they do not necessarily determine the coding. If the hypothetical structure we are examining is valid, then samples of a speech signal, beginning with the initial pulse, should also be intelligible. They are. Dick

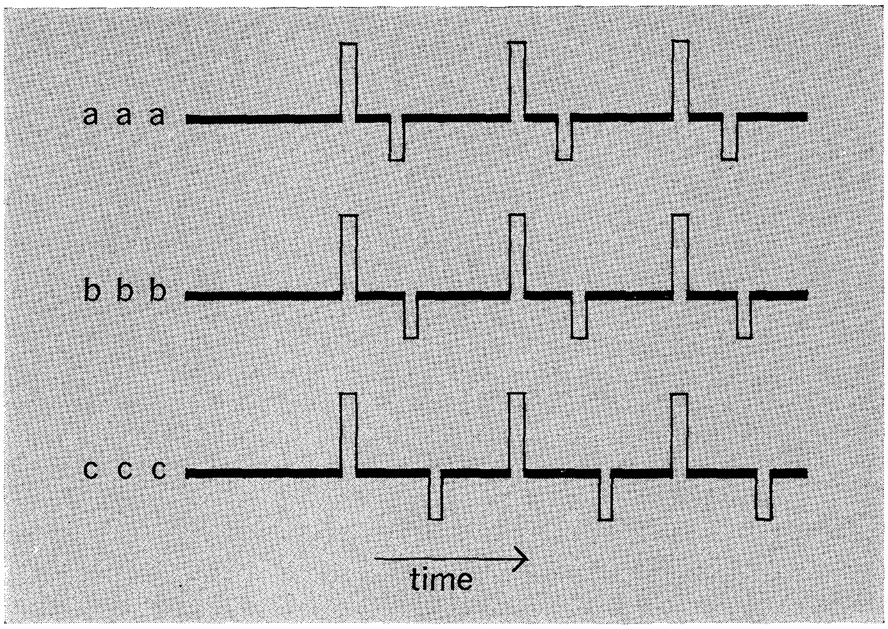


Figure 7. Dimensionless code with clock.

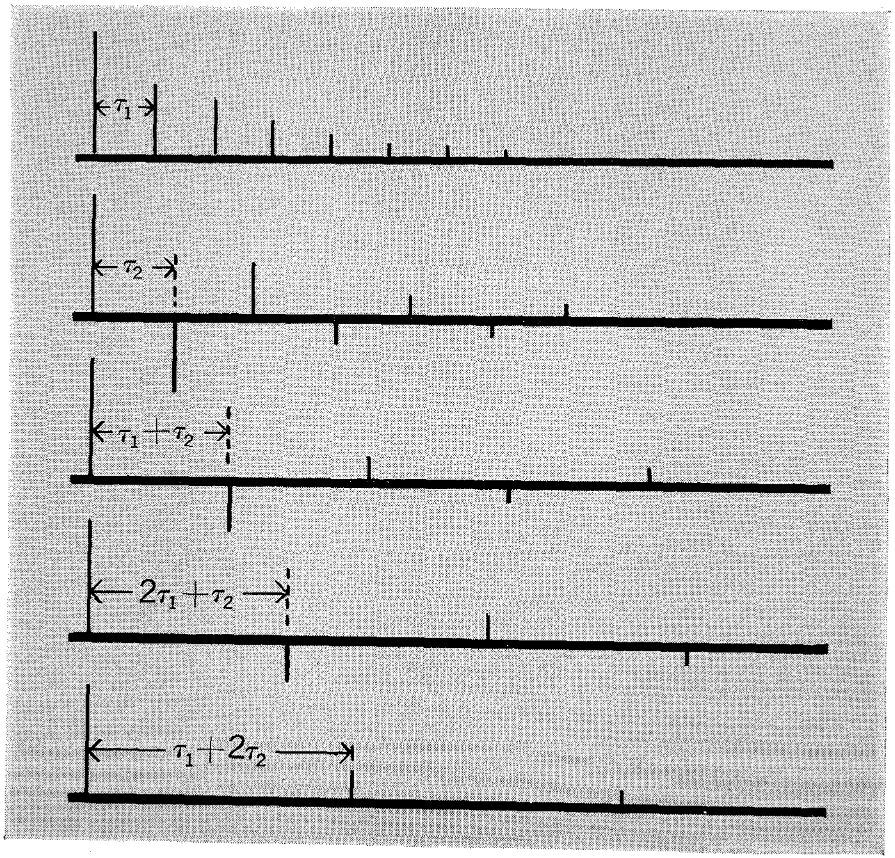


Figure 8. Part of the system of reflections in the box model.

Spencer devised a means of identifying the initial pulse—"pitch position"—and gated the signal for various times. He found that up to about 2.5 milliseconds—out of 10 milliseconds for male speech—the result was quite intelligible. A prediction, based on the hypothetical model was validated. (Incidentally, the female voice is about twice as redundant as the male.) This experiment demonstrates that we need only the basic code for speech, consisting of a set of time delays in reflection, in order to convey the message. Perhaps we should present the general mathematical expression for this system for anyone who might be interested. The formulae presented are in Laplace Transform notation, and may be completely ignored if you wish, but don't miss Figures 9 and 10.

$$H(s) = P(s) \sum_{n=0}^{\propto} a_1^n \, \varepsilon^{-ns\tau_1} \sum_{k=0}^{\propto} (-1)^k a_2^k \, \varepsilon^{-ks\tau_2}$$

$H(s)$ = sound at the orifice
$P(s)$ = stimulating pulse
τ_1 = first delay length
τ_2 = second delay length

The attenuations, a_1, a_2, are considered to be less than 1 and greater than 0. Thus the dominant terms in the expression will be for $n = 0,1$ $k = 0, 1$, or three delay lengths given by τ_1, τ_2, $\tau_1 + \tau_2$. Synthesis of this function is very simple, pulse a feedback delay line as shown in Figure 9. Recognition of the resultant signal is a different and fascinating matter, Figure 10.

The inverse of the first sum is an extremely simple system, which can be expressed mathematically as

$$1 - a_1 \, \varepsilon^{-s\tau_1}$$

and the second one as

$$1 + a_2 \varepsilon^{-s\tau_2}$$

These are almost trivially simple to construct in a nervous system. The construction is diagrammed in Figure 10. We should also remark that, under limited circumstances—size invariance—it is sufficient to identify τ_1 in order to recognize the message particle.

I can't tell if it gives you the same sense of pleasure as it does me to see the derivation of a system of analyses and synthesis of speech which is so easily realized in a nervous system. Perhaps our greatest pleasure in this research, and its various aspects, is that the organization of a nerve system to do the required operations is so agreeable with the apparent physiological structure. It is also fortunate that the many aspects of human hearing which we have investigated, also have realizations in the same simple theoretical structure, and we have built functioning models of them.

So much for theory and the bases of analyses and synthesis. Using the ideas presented, we constructed devices to produce phonemic translation between the whistle language of the porpoise and the structured language of man. The two translators, one for human to porpoise and one for porpoise to human are shown in Figure 11.

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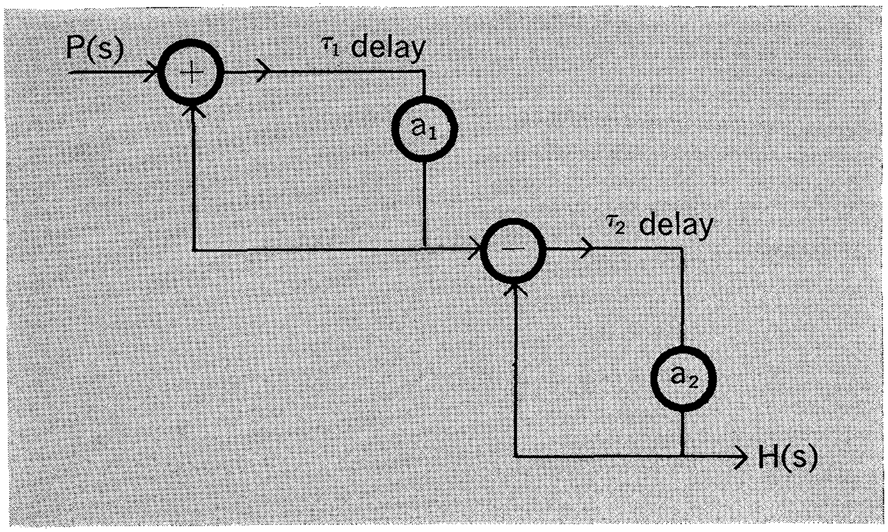


Figure 9. An example of synthesis of a box code.

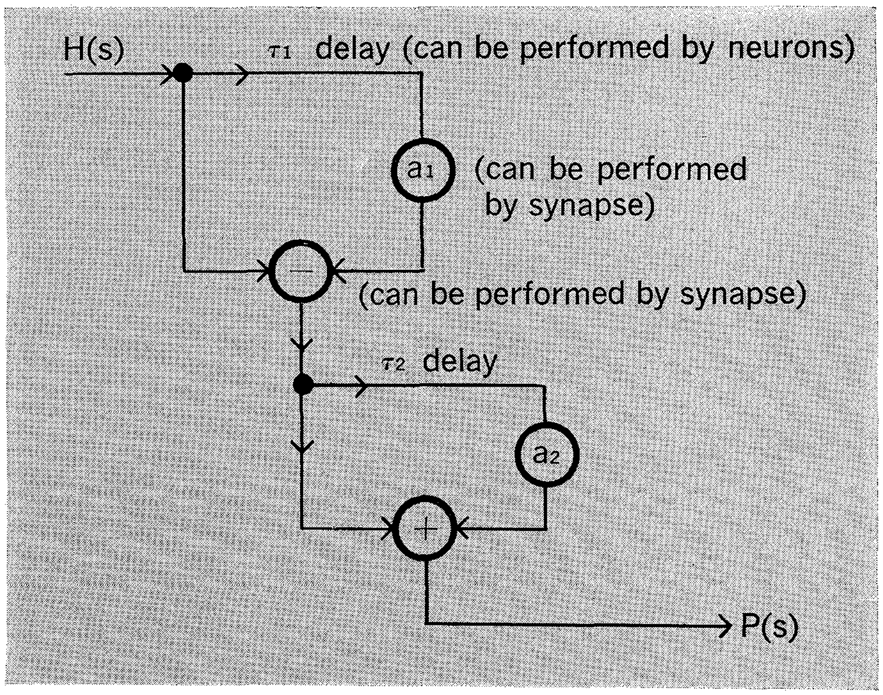

H(s)
τ_1 delay (can be performed by neurons)
a_1
(can be performed by synapse)
−
(can be performed by synapse)
τ_2 delay
a_2
+
P(s)

Figure 10. An example of inverse or recognition of the code of Figure 9.

GENUS TRAITOR

MACK REYNOLDS

When the rat-faced, sharp-tongued, World Traitor
tries to tell the world that the Acknowledged World Hero is all wrong . . .
somehow, he doesn't have a very receptive audience.
Even if he's one hundred per cent right about the brooding threat . . .

ILLUSTRATED BY JOHN SCHOENHERR

Benjamin Fullbright made a beautiful traitor. He had everything. Brunet, a thin almost hatchet face, narrowed eyes, petulant expression, an unconscious tendency to sneer at opinion other than his own. He was a natural, and as such extremely high in the estimation of his fellow men. There were few not in a hurry vicariously to drink his blood. Those few were of the type who got their jollies prolonging the realization of satisfaction.

For Benjamin Fullbright, once astronaut, was on trial for his life before his peers—the balance of the human race.

The prosecutor was saying, ". . . Betray his friends or relatives, nor even, say, the woman he loved. Nay. The respondent rises above such eminences of the past as the Marquis de Sade, Torquemada or Caligula . . ."

Fullbright's attention wandered. He'd already got a bellyful of the other's oratory. Frol Rublyov was obviously enjoying his day in the sun, and probably bucking for some promotion in the TwoWorld government's legal system. Ben Fullbright grumbled his contempt.

Rublyov caught the expression and pointed at him dramatically. "He laughs. This trator willing to betray his family, his country, the planet of his origin, his species."

Antony Duff-Warwick came unhappily to his feet and said, "I demur."

"Well, bully for you," the accused muttered. "I thought you'd gone into hibernation."

The defense specialist provided by the World League for Civil Rights flushed, but ignored him. The man hated his guts, Ben Fullbright realized. On top of his natural revulsion, shared by everyone else Ben knew of, poor Duff-Warwick was in the reverse position to that of Rublyov whose name was being made by the minute.

The presider was scowling down at Ben Fullbright's defender.

The defense specialist cleared his throat apologetically and said, "The prosecutor speaks as though the respondent has already been found guilty. The defense would request that he husband his oratorical abilities for his summation."

The presider could have utilized his own prerogatives in such a challenge but like Rublyov he was playing to an audience such as he had never dreamed of. He turned to the video-technician and gestured.

The vote of the audience-jury was taken and the panel above the presider's bench flashed red, finding against the defense.

Ben Fullbright twisted his mouth into disdain for the benefit of the nearest lens. The jury had found for him not even once during the past few days, no matter what the issue. All Earth, and Luna and the satellites for that matter, were having the time of their lives badgering him.

The prosecutor was at it again, and Ben let his attention roam.

It hadn't far to roam. The room was largely barren. Few bothered to attend a trial these days, preferring to remain at home and witness proceedings via telly, which

at the same time allowed them to participate as a unit of the jury in much the same way as those interested could participate in government. The voting buttons, *yea* and *nay*, were on every citizen's telly set and democracy was a working thing with the citizenry as a whole participating for the first time since the early cantons of Switzerland.

For that matter, there were no provisions for an audience. Thus, the courtroom was sufficiently large only for the equipment of the video-technicians, the presider's bench, the table at which the prosecutor and his assistants sat and a similar table for the respondent and his defense specialists and assistants. The balance of the court's sitting capacity was reserved for witnesses.

There was an exception today, and Ben had gone to the trouble of asking Duff-Warwick about her. That worthy had impatiently informed him that she was Dorthea Flavelle, a freelancing newshen working largely for the lower echelon, sentiment dripping, women's publications. Evidently, she specialized in taking sides with the underdog. No murderer so repulsive that he might not be visited in his cell before execution by Dorry Flavelle hot on the trail of a story about his early life being disrupted by a broken home, his values corrupted by poverty, his better qualities smothered by the bitterness of a love unrequited.

She had her work cut out for her this time. In fact, he decided the girl was wasting her efforts. She had about as much chance of selling a piece that showed any sympathy for him as some scribbler would have had in placing an upbeat article which favored the defendants in some Jewish periodical at the time of the Nuremburg trials.

He took her in idly. Girl would be the proper term, rather than woman. He doubted that she was more than halfway through her twenties. A good looking enough curve by present standards. He approved of the fact that she evidently revolted moderately against the extremes of popular fashion. In other circumstances, Ben Fullbright could have wanted to know Dorry Flavelle considerably better. Not that he was much of a lady's man; his physical appearance had always precluded that.

The prosecutor was working away on Ben Fullbright's iniquities, playing to the endless masses tuned in everywhere that man lived and could receive the all but omnipresent telly.

The defendant, bored, let his mind drift back to the Nuremburg trials. He wondered how the surviving Nazis

had felt, the long months there. The adventurers Goering and Ribbentrop, the crackpots Hess and Rosenberg, the opportunists Schacht and Von Papen, the professional militarists, Jodl, Keitel, Raeder and Doenitz, the sadists Streicher and Kaltenbrunner. Who were the others? He had forgotten.

Given the modern method of trial with the million mass of one's contemporaries holding the eventual vote, who would have allotted mercy for any of the Nazis? Would have even the Germans? Indeed, had it been put to universal vote, how many would have returned to the Middle Ages for their punishment of the fallen supermen? How many would have been satisfied with simple and comparatively merciful hanging?

They were approaching the time for his defense, and he could feel the civil rights defense representative next to him stir in distress. Ben Fullbright knew that Antony Duff-Warwick had at least made the motions of trying to find character witnesses, and even to explore the possibilities of declaring his respondent legally insane. Ben twisted his mouth in amusement. The other had probably also, even in his revulsion, dug into the evidence, trying to find a germ of extenuating circumstance. Ben hadn't co-operated with the man, not feeling it worth the while.

No one knew better than Ben Fullbright that the extenuating circumstance was not there to be found.

The defense was going to be abruptly short, and his summary as well. In fact, the trial was a farce, as all concerned knew before it ever began. They were not interested in hearing his side of the matter. This was but a preliminary show for the mob, before they tore him down.

It was his own fault. He'd handled it like an idiot.

There was some sort of commotion at the door and Fullbright turned with the rest.

It was Raul Murillo in his wheelchair. Ben grunted. He had expected Raul before this, wondered why the prosecutor hadn't long since trotted out he who should have been the prime witness for the TwoWorld state.

Raul was accompanied by a brace of uniformed male nurses, probably, Fullbright decided wryly, to keep off the mobs of autograph hunters and worshipful admirers of both sexes, rather than for medical aid.

All present in the courtroom came to their feet, save the respondent. His defense specialist hissed, "Stand up. You'll have another mark against you in the audience-jury's eyes if you don't."

Ben Fullbright had to chuckle at that. He remained seated.

The presider, flustered, was improvising a speech of welcome to his court and not doing so well at it. He wound up with an invitation for the newcomer to join him at his bench.

Raul did it up brown. Trust Raul. His chair came to a halt before the presider's bench and directly between the tables of prosecution and defense—not to mention being directly on lens of every telly camera in the court.

He looked up and in the squeaky voice resultant from his months of deprivation on Mars said, "With appreciation of the honor, I would prefer to take my stand next to Benjamin Fullbright." And with that he touched the controls necessary to direct his vehicle to the defense table.

If the crippled man had suddenly sprouted boosters and taken off through the window, he couldn't have been more effective. The presider leaned on his desk weakly and goggled down at him. The ultra-efficient video-technician, flabbergasted, fouled up his controls. Witnesses, prosecution and defense were speechless.

Some dozen billion observers were glued to the trial's progress, but Ben Fullbright suspected that he alone, of them all—he and Raul Murillo—was not completely astonished at this development. And Ben himself was mildly surprised.

It was Frol Rublyov who first reacted. He must have seen the moving finger writing out the death of his beautiful dream. With a roar of frustration, he called to the presider, "I demure. I protest this unorthodox intrusion. I demur! The defense is taking advantage of . . ."

But already the eyes of the presider had turned fish. He held up a hand. "Is it your intention, sir, to criticize Commodore Raul Murillo?"

In seeing his triumph melt away the Russian had lost control. "He is intruding in such manner . . . without precedence . . . he is—"

The presider interrupted coldly, "Not in my court, sir. I will not have voice raised in my court against the actions of the first holder of the World Medal of Honor." He paused dramatically before adding, "The bearer of which can do no wrong."

Ben Fullbright chuckled under his breath. But Raul Murillo sat staring straight ahead. They had passed no word of greeting, nor had their eyes met. Both knew where they stood.

The Russian, still not reacting rationally under the weight of the debacle, spun to the control booth of the video-technician. "*I demure!*"

The vote was taken and the panel turned red in the first defeat the prosecution had met since the trial had begun.

The presider turned to Raul Murillo unctuously. "The court realizes your physical resources are limited, commodore. If you wish to testify at this time . . ."

Raul squeaked, "He saved my life. I request that the respondent be released in my custody."

That set back even the presider.

Frol Rublyov, his voice matching that of the surprise witness, squeak for squeak, got out, "I demure."

He was awarded a judicial scowl, but the video-technician went through the motions of taking the vote. It was not so quick in coming this time, but the panel burned red, finding against the prosecution.

Antony Duff-Warwick found presence enough of mind to come to his feet. "I call for an audience-jury vote on the commodore's request."

Ben Fullbright tensed. It was impossible now, or impossible never. The most popular man in the system was placing his prestige in the balance for the life of the most hated. Ten minutes from now there might be second thoughts, but for the moment the drama was full upon them all, both in the courtroom and in the billions of homes, offices, factories—wherever the trial was being followed, and it was being followed everywhere.

The video-technician shakily took the vote.

And the panel burned green.

Raul bit out from the side of his mouth, "Quickly now, you scum. Get us out of here before some wheel comes off."

Ben Fullbright came to his feet, and without pausing so long as to speak to his defense specialist, took his place behind the other's chair and made the motions of escorting the bearer of Earth's ultimate decoration from the court.

Ben Fullbright paused momentarily outside for a breath of the air he had highly doubted would ever be free to him again. But Raul Murillo rasped urgently, "That floater down there, you flat, get there immediately. There's sure to be some reaction."

The hero spun in his seat and rapped to the male nurses, who had followed them in a daze, "Get this contraption into the car. We've got to move!"

The floater had been so rebuilt that there was room both for the wheelchair and for additional passengers in ordinary seats. Ben sat in the back with him, as the vehicle took an upper level, and, using its courtesy sirens, sped toward Raul Murillo's destination. He looked at the space hero's tight face from the side of his eyes. "What do you have in mind, Raul?"

"We'll see," the other squeaked, not bothering to keep the contumely from his voice.

Ben shrugged and sank back into the seat to look out the windows. It had been a time since he had driven freely through a major Earth city such as Great London. There had been the long years off Earth, and then, upon his return, the imprisonment. There was little resemblance to the London he had known fairly well almost ten years ago.

He was somewhat surprised when the floater settled onto a lawn, atop what had moments ago seemed a giant office building. It took him moments to realize that the penthouse and its gardens were thoroughly camouflaged so that flying craft had to approach to within a few yards before being able to identify Raul Murillo's retreat.

"Pretty swank," he said.

The crippled man looked at him. "It could all have been yours," he said in his mouse-voice.

Ben chuckled. "No," he said. "Afraid not. Besides, the system hardly has room for two live holders of the Medal of Honor at once. Thought the idea was you usually don't get the award until you're crisp?"

"It is assumed that it will usually be awarded posthumously," Raul admitted. There was an element of tone that suggested he disliked even to converse with the man whose life he had just saved. He turned to the male nurses. "You boys had better notify the staff that we're in what amounts to a state of siege. Bar all entry."

Raul then stood up from his wheelchair and, with only a slight limp, led the way into the building's interior. He noted Ben's raised eyebrows and growled defensively, "Protective coloring. If they knew I could get around, I'd be scheduled for public affairs, speeches and what not."

Ben Fullbright laughed at him, the edge of sneer in his voice not suppressed. He said, "But it must backfire. If they didn't think you spent half your time in bed, about ready to kick off, every good-looking curve in the system would zero-in on you."

Raul grunted his contempt of the other's opinion. "You'd be surprised how soon a kid can get tired of having a candy shop all of his own, Fullbright. I can get all the curves I want, just by snapping my fingers. I seldom bother to snap."

Ben shrugged. The nearest he had been to a woman in some years was that Dorthea Flavelle, the newshen who had wriggled her way into the courtroom seeking a sob story.

They had entered the living quarters of the elaborate establishment and Raul Murillo led the way to a moderately large, library-study. The hero lowered himself into an elaborate chair which had obviously been built to accommodate his crippled body. He motioned the man he had saved to another chair, curtly.

"A drink?" he said.

Ben chuckled. "It's been a long time."

Raul Murillo's voice didn't respond. "Your chair is automatic," he said. "Press the button there at your right hand and order."

Ben pressed the indicated button and said, "Double Canadian whisky, neat." He looked up at his host. "Something for you?"

"I'm not drinking with you, Benny," Raul Murillo said.

A section in the center of the small table sitting next to Ben Fullbright's chair opened up and a glass rose. Ben took it, sipped it, made a face at the unaccustomed strength of the spirits. He looked over the glass at the other.

"Why'd you bother to save my neck, there at the trial, Raul?"

"You saved mine. Now we're even, Benny."

Ben Fullbright looked at him for a long calculating moment. "Are we?" he said softly.

"So far as I'm concerned, you scum."

"I see that you maintain the prejudices of our contemporaries," Ben sneered. "Which has its surprising aspects in view of the fact that it was your reporting that largely produced them."

"You're a traitor to the race, Fullbright. I hate your entrails . . ."

"Guts," Ben corrected absently.

". . . As much as anybody in the system."

Ben Fullbright's eyes were narrowed. "When I saved your life, Raul, it was to send you on to a spot you'd probably dreamed of all your life. The very top. Holder of the specially created World Medal of Honor, the bearer of which can do no wrong."

Raul Murillo's face was empty.

Ben said, "While on the other hand, although admittedly you've saved my life, if I step out on the street now I wouldn't get a block without being lynched."

His host said flatly, "The problem is unimportant anyway, Benny. You're not going to get out on the street." His hands had been buried in his jacket pockets. Now the right emerged with the latest model pseudo-derringer.

Ben Fullbright looked at it and chuckled. He recognized the weapon. The fad these days was to take the physical appearance of a weapon of yesteryear and to endow it with man's latest means of destruction. The tiny gun Murillo held, a seeming duplicate of the hideaway double-barreled pistol of the Western gambler of the Nineteenth Century, actually had the capacity to literally blow apart a score of opponents in as many seconds, and quite silently at that.

He said musingly, "I wondered how you were going to get at me."

Murillo repeated, "We're even, Benny. You saved my life, I've saved yours. Now we get back to where we started, there when the ship collapsed."

Ben Fullbright had learned to laugh his scorn at every adversity in the past months. He had given up so long ago that life expectation meant little to him, and his appreciation of the ludicrous in man's affairs had grown as his position became increasingly untenable.

He said, "Raul, you're a riot. Saving my life for the privilege of finishing me off personally, is the most left-handed rescue in the history of last minute reprieve."

The other was beyond debate, not to speak of humor. He leaned forward, hate in his eyes. "Benny, I swore I'd kill you when you first began lapping up . . ."

"Sucking up," Ben corrected him, automatically. "If you're going to continue to use those colloquialisms . . ."

". . . To those Martian monsters. I swore it to myself. The whole human race was at stake, and to save your own verminous . . ."

"Lousy, is the term," Ben muttered sourly.

". . . Skin, you told them everything they wanted to know. They didn't even have to twist your arm. You talked faster than they could ask the questions."

"Which, incidentally, prevented them from twisting yours."

The other, his face in boiling rage, leaned farther forward, the tiny gun shaking in his hand. "Don't alibi, Benny. It wasn't my fate you were thinking about . . ."

Ben Fullbright brought his glass up as though for another drink, it continued moving however and with a final quick motion he dashed the contents into the other's eyes. Moving cobra fast, he slashed forward. His left hand lanced out straight and then, within the wrist of the other, quickly to the left, brushing the gun away and upward. His right fist, knuckles out, banged up against the other's left ear, smashingly.

Raul Murillo fell backward, his right hand fumbling frantically for a summons button on his chair's arm rest.

His assailant, more deliberately now, chopped with his right hand viciously so that the hideaway gun fell to the floor, still unfired. Backhanded then, edge of the hand like a meat chopper, he swung brutally, connecting between the other's upper lip and nostrils. Raul Murillo collapsed with a faint grunt of pain.

Ben Fullbright, breathing deeply, stared down at him. His eyes were first narrow, then finally empty. He growled unhappily, "First casualty of the war between Mars and Earth." Which wasn't quite accurate, of course.

His glance went snake quick about the room. Raul hadn't managed to get to his summons button in time. There was no immediate reason to believe there would be intrusion.

He swept up the gun and dropped it into a side pocket. Grumbling distaste, he began searching the other. Our Medal of Honor bearer carried no credit card. No credit card! The only man in the system who didn't need one.

He had to think. He had been ready for none of these developments. Not since Raul had come a-wheeling into the courtroom to rescue the man he hated—rescue him so that he might have the satisfaction of acting as executioner himself.

All the fat that ever was, was in the fire now. He'd best get out while the getting was good. He fetched the little gun from his pocket. He'd never handled one of the pseudo-derringers before, but its operation was obvious.

All right. He'd find out if those bodyguard characters of Raul's wore body armor. If they did, he was back in the soup. If they didn't, he was going to have one or two more murders racked up against him.

Murder? Well, not really. They didn't call it murder when you butchered someone in war. The victim was a casualty, and the killer a *combatant.* His self directed sneer, as he headed for the door, was one of sick humor. Offhand, he couldn't think of anyone, Earthling or Martian, who would look on him as a combatant participating in warfare.

He still had *some* time. He had to have *some* time. Dashing out into the streets in mad effort to escape the pursuit to come, wouldn't get him far, particularly since he had no place to go. No hole in all the world where he could go to ground. What few relatives and fewer friends he had possessed had turned on him as quickly as enemies. He had a brother, currently living somewhere in South America, who would have shot him on sight had he appeared at the door.

He sought out Raul Murillo's bedroom. Neither were big men and the other had been near enough Ben's size so that he could wear the late hero's clothes. He wrapped up two shirts and several other articles of clothing in a large towel from the bath. He added soap and shaving needs and a toothbrush, and snorted amusement. He was going on the run the fancy way.

He went back to the library-study where he had left the body of his victim and approached the automatic chair. He pressed the order button and hesitated. Just how much could he request without stirring the suspicion of someone along the line?

He said, "A dozen mixed sandwiches. Real beef, real ham, cheese."

When the food arrived, he wrapped it in paper from a periodical and without a glance at the dead hero started back toward the floater parked on the garden lawn.

Ben Fullbright was three steps out the door before he spotted the burly male nurse about to climb into the vehicle. He tried to reverse his engines but it was obvious the other had seen him. The man stopped, scowled.

Ben said, "The commodore has decided to take off for the country until things cool off. He said to stash these things in the floater." As he spoke, he held up his packages as though in explanation, and continued to walk toward the man.

Something he had said evidently didn't go. The guard's hand whipped suddenly toward his hip.

Ben Fullbright dropped both his packages and grabbed for the jacket pocket into which he had dropped Raul's derringer.

His opponent's holster was located in such wise as not to interfere with the neatness of his uniform. Ben hesitated only momentarily before cutting the man down. There was no alternative. The moments that would elapse before an alarm went out were priceless. Besides, it was kill or be killed; the weapon the other had finally emerged with was a pseudo-sixshooter.

Ben Fullbright, after sweeping up his fallen loot, stepped over the guard and into the craft. He hit the lift lever with the butt of his right hand and took off in a random direction. He still had no idea to where he was fleeing.

Five minutes later, he cursed himself in a fury. The guard would have borne a credit card! He had forgotten! A credit card to use in the multi-million automated shops, restaurants, fuel dispensaries. For a rash moment he considered returning, but then shook his head in despair. Raul's servant had been obviously in the process of picking up the floater with the intention of garaging it. When it didn't turn up, someone would check.

Nor could he risk remaining in this vehicle for any period. Without doubt, the license was known. The license of the sole bearer of the World Medal of Honor would be known not only to every traffic technician, but to many a citizen. The floater had to be ditched.

He grunted in sudden sour amusement as an inspiration came, and dropped several levels. He slowed his speed and finally found that for which he was looking. An isolated communications booth.

He came to a halt before it, and wiping his face with his hand as though checking his morning shave, left the vehicle and hustled into the booth's shelter. He had no credit card and could consequently not use the videophone even had he wished, but he found the directory he sought.

Minutes later he left the booth, his head low, and once again fumbling his hand over his chin, this time as though in deep thought, and made it back to the floater. He returned to the third level. He could have utilized more speed higher up, but traffic thinned on the top levels and his craft would have been that much more conspicuous.

He examined the controls more thoroughly as he progressed toward the South Kensington section of Great London, and found what he wanted. He might have known that a vehicle owned by Raul Murillo would have every gadget known to vehicular travel, and a homer was among them. He cut to the left at Knightsbridge and headed along the Brompton Road overpass. The Bolton Gardens vicinity was comparatively free of pedestrians, so he dropped there. He set the floater to return to Murillo's penthouse, and taking up his packages, abandoned the vehicle.

He took the second pedestrian level which was considerably less traveled than the first with its automat-shops, its restaurants and pubs. The few others he met, largely workers and children, paid him no attention. It might have been different, he knew, had the alarm been out. He had to get to cover before it was.

He turned left on Glendow to Harrington Road and then left again for a square or two. The address for which he was looking was somewhere in this vicinity but he couldn't afford to ask. His accent was North American and would be noted, even if his features weren't recognized. It was a matter of walking up one street, down another, until he stumbled upon it.

He found Stanhope Mews eventually, feeling by now his physical exhaustion. His years in the lesser gravity of Mars hadn't done his stamina a great deal of good. Nor had his Earth-side imprisonment allowed him to rebuild his once wiry muscles.

His destination was an aged building which formerly probably had been the home of a more than averagely wealthy Londoner of the mid-Twentieth Century. It had obviously been converted into studios and small apartments.

He climbed the stairs, meeting no one. At the third floor, he put his burden down and leaned for a moment against the wall, catching his breath. He might need his breath, shortly.

There was a video-identity screen on the door, and he scowled at it. You didn't expect an identity screen in a second- or third-rate dwelling of this type.

However, he pressed the bell. He could hear it ringing within, but moments passed without response. Actually, Ben hadn't expected anybody to be home.

He touched the door experimentally, decided its age was in keeping with the balance of the building, backed up and threw himself against it. It took three attempts before the lock broke and allowed him to enter.

He picked up his packages, went in and deposited them on a chair, then returned to the door and took stock of its condition. It was in fairly good shape. When he closed it, there was no evidence from the outside that it had been broken.

He looked about the apartment which was considerably neater, more luxurious than the neighborhood would have suggested. There was a small kitchen, which amused him. The apartment's owner obviously was capable of carrying affectation to the extreme. Whoever heard of a kitchen, in this day? However, he had no argument. There were things he could eat in the small pantry and refrigerator, which allowed him to preserve his sandwiches. There was also a stock of potables and he opened a bottle of brown ale to go with his food and returned with it to the large studio room and the most comfortable seat therein.

He would have liked to have napped, but couldn't afford to. Not with the door broken so that anyone could enter without waking him. So he waited and finally was rewarded by hearing movement outside the studio's entry. He came quickly to his feet, the little hold-out gun in hand, and took his position behind the door.

He could make out various gasps and indignant mutterings, and then Dorthea Flavelle entered, her face flushed with anger at the vandalism perpetrated on her home.

Ben Fullbright kicked the door closed behind her and leered his greeting. "Good evening, Miss Flavelle," he told her.

Her eyes, guppy-wide, shot from his face to the gun in his hand and back again. She spun to the door, but he had anticipated retreat and leaned against it. He dropped the gun back into his jacket pocket and shook his head. "It's not for you. I just didn't know who might be entering."

She evolved from fear to indignation. "What in the name . . .?"

He held up a hand and twisted his face in a manner less than reassuring. "Ease up. I'll tell you all about it."

"You'd better tell me all about it," she snapped belligerently.

"All right, all right. Sit down."

Her eyes swept the room and she took in the remains of his food and drink. "Well . . ."

On the face of it, the girl didn't know the developments of the past two or three hours. At least he had some time for build-up.

She was news reporter enough to sense the spectacular story value of this, and was comparatively mild when he insisted she sit down. He took a place across, and looked at her for a moment. She was more attractive than he had remembered. In the court, she had been just one more curve among the billions who were watching him squirm. He had to chuckle inwardly. Alone with a woman, and a darn attractive one at that, for the first time in—good grief, how long?

When he didn't immediately speak, she said scornfully, "And to just what do I owe the honor of this visit, Mr. Fullbright?"

His face reflected his own off-beat brand of humor. "Of all Earth, Miss Flavelle, you're the only person who has shown any sympathy for me."

She snorted her distaste of him. "You seem to forget Commodore Murillo."

"No," he said, "I didn't forget Raul."

She snapped, "Well, don't get the wrong idea from my appearance in court. I admittedly specialize in lost causes, but not *this* lost."

He said in mockery, "But in your time you've had a word to say for such worthies as Stalin, Hitler, Jack the Ripper . . ."

The video screen must have been automatically set for news broadcasts. It flicked suddenly on, to reveal the face of an excited caster, so excited that he stuttered in his delivery.

Ben Fullbright sat through it, watching her face, his hand back in his jacket pocket.

Raul's body and that of his male nurse had been found. They had most of the details of Ben's escape. What he had stolen. The fact that the floater had returned, indicating that he was still in Great London.

When the cast was over, the telly went automatically dead again. Ben turned to the girl and lifted his eyebrows cynically.

And cobralike she was at him, her fingers clawing at his face, the nails like a cat's claws, her face in hate, like a cat's face in kill.

He straightarmed her, settling her back a-fly, setting her on the floor, her arms and legs every which way, her position ludicrous. She glared her hatred, then shot her eyes in the direction of the door, desperately.

"Use your head," he said sourly. "I'm desperate and at this stage I can't let you go."

She snarled at him, "Why did you come here?"

"I hadn't any other place to go," he said reasonably. "Sit down. Obviously, I didn't come to hurt you."

She pushed herself awkwardly to her feet, glowered, but finally resumed the chair across from him. "Why did you come here?" she repeated.

"On the off chance that possibly you're the only person around who might listen to my story."

"I'm not going to allow you to make me a tool for . . ."

"Oh, shut up," he said in disgust. "You're going to listen to me if you want to or not. Why don't you relax? You might even learn something."

She set her mouth stubbornly, but at least there was the beginning of interest in her eyes. Benjamin Fullbright was currently the biggest story going and all odds were that he wouldn't live long enough to repeat his disclosures to anyone else. Finally she said, "If you had an alibi for your actions, why didn't you reveal it at the trial?"

He was scornfully amused. "You were there. Not even my defense specialist, who was himself barely able to communicate with me without vomiting, could open his trap without being muzzled."

"You could have said anything you wished in your summation period."

"And planned to. That's what I was waiting for."

"Then . . ."

"Then why did I get out from under when Raul gave me the chance? Because I value my neck. I went into that courtroom figuring I'd have the opportunity to have my say, but I found myself in the same spot as the accomplices of John Wilkes Booth after Lincoln's assassination."

Her expression was blank, so he said, "At their supposed trial they each had their heads covered with tightfitting canvas bags which made it impossible for them to see, hear and speak." He grimaced again, in depreciation. "They were not allowed to talk before being hanged."

Dorry Flavelle said hotly, "Modern trial by audience-jury is the most democratic the world has ever known. Every member of the telly audience can participate by voting. One is truly judged by one's peers."

"And if the whole audience is burning bright with lynch fever . . ."

She glared at him. "You would have had your say!"

"Perhaps," he shrugged. "However, nothing that went before so indicated. So I took my chance to escape, on the theory that he who runs away has a chance to explain another day—or however it goes."

Her mouth tightened again. "All right, traitor, murderer. I'm listening."

He grunted, "I hope so. Sit pat, this is going to take a time." He arose and went to the tiny kitchen and returned with a bottle. He sloshed a heavy slug into his glass before sitting down in his chair.

"I suppose it begins with the Russkies. It was they, on that first manned Mars probe, who discovered that Deimos and Phobos, the two tiny satellites of that planet, were actually artificial—age old, but artificial satellites. They had no manner of grappling, couldn't waste fuel of the *Cosmocraft Mars* to maneuver closer, but they brought back photographs. It must have been then that the first chill went through the world's population."

"This isn't exactly news to me," she bit out.

He ignored her, took a sip of his whisky, and went on. "But it wasn't until our own expedition in the spaceship *Ares* complete with six astronauts, made the manned landing that the reality confronted us."

"The reality?"

"That's right," he smirked. "The shocking fact that man is not the unique, above-all creature that he has thought himself. That there is other intelligent life."

She bit out, hotly, "You consider Martian life intelligent in the *real* sense of the word?"

"Of course. Don't be so silly as to think otherwise."

"Then you concede the same to ants, to termites, to . . ."

"See?" he waggled an amused finger at her. "You stop thinking the moment the suggestion is made that there is other intelligent life than our own. Where'd you pick up the idea they're like ants?"

"It's common knowledge."

He laughed mockingly at her. "Like the common knowledge the Southerners used to have that the Negro was inferior to the white, eh? Like the common knowledge that all Jews were rich and trying to dominate the one hundred and one per cent Aryans, eh? Like the common knowledge that free enterprise was so superior to Soviet stateism that the backward Soviet countries would never catch up to the West, eh?"

She flushed her irritation. "Commodore Murillo reported thoroughly on the Martians."

"Raul was a flat," Ben snarled. "Besides which, he spent most of his time on Mars in bed. By the way, when you get around to it, you might do a bit of wondering how these ants, or termites, managed to keep him alive."

She frowned, but already the conversation was taking her in. "What do you mean?"

"I'm not getting through to you." He tossed the balance of his drink back. "Let's return to the story. You are, of course, familiar with the Walter Hohmann Round Trip which both the first Russkie probe and later our own expedition utilized."

She hated to concede that she wasn't up on such matters. But he read her expression.

"Briefly," he said, "with the fuels and spacecraft we had, a trip to Mars and return was impossible, either for us, or for the Russkies. The trip to Mars would take about two-hundred and fifty-eight days, but by the time you got there, it wouldn't be just a matter of turning about and returning. Earth travels faster in its orbit about the sun than does Mars. By the time you were ready to come back, Earth would be on the opposite side of Sol. Your spaceship would just have to wait at Mars until Earth was in opposition again. The wait would last four hundred and fifty-five days, about a year and three months. And then the return trip would take another two hundred and fifty-six days. In short, about two years and eight months for the expedition."

He shook his head. "Much too long, Miss Flavelle, for our present space vehicles. Now, a round trip to Venus would be somewhat less. The trip out would take one hundred and forty-six days, then you'd have a wait of four hundred and seventy days, and then there'd be the one hundred and forty-six days to get back. Altogether, two years and a month."

Dorry Flavelle was frowning.

He grinned at her lack of knowledgeability. "Either trip was impossible, no matter how much either the Soviets or the West wanted to propagandize. However, a trip to *both* Mars and Venus was another thing. Dr. Walter Hohmann worked it all out in his *"Die Erreichbarkeit der Himmelskörper"* long before the first Russkie satellite went beeping its way around the world. Under his plan, the ship would first proceed to Mars, but wouldn't land, nor even remain in orbit around Mars for the four hundred and fifty-five days. Instead, it would circle Mars for a few weeks and then head out for Venus. Venus would be circled for a few weeks and by then Earth would be in a position for a return. The whole project would take about a year and a half."

"What's this got to do with your betrayal of . . ."

He held up a hand. "The Russkies sent off their two-man *Cosmocraft Mars,* with the result everybody knows. They got to Mars, and were shocked to find that the two moons were gigantic artificial satellites, Phobos about ten miles in diameter and Deimos about half that."

He twisted his mouth at her. "And, of course, we all knew what that meant. Earth isn't about able to build a satellite of that magnitude, not to speak of launching it. Actually, we were all being flats, but we didn't know it."

She obviously hadn't got that, but he didn't elaborate. Ben Fullbright went on. "To counter the Russkies being first to probe Mars and Venus, we had to top them. We sent a six-man expedition in the *Ares,* a ship capable of landing briefly on Mars going on to orbit Venus and then return to Earth."

His face twisted in memory. "The trip was rugged. It separated, shall we say, the men from the boys."

"I suppose you think of yourself as one of the men."

"Nope. I was one of the boys, and so was Raul—"

She wasn't going to let Earth's hero down that easy. "Raul Murillo was—"

"A flat," he interrupted. "Shut up and listen. Raul and I grated on each other. For one thing, he had an irritating habit of using dated colloquialisms, incorrectly. For another, he caught onto the fact that I disliked being called Benny. Childish, eh? But you've never been cooped up in a ship the size of the *Ares* for months on end. Shortly, Larry Tinker and Gus Bjorsen were right in it with us. Pierre Dusage, our skipper, and Jake Levy were the two heroes. If it hadn't been for them, we would all have been crisp before we ever raised Mars. They were good men, Miss Flavelle, the human race can be proud of them."

She snorted scornfully at that. "Look who's talking."

He nodded. "Yes. Frankly, they were an inspiration to me. Especially after we landed on Mars." He took a deep breath. "I won't have to tell you about the surface of Mars. The reports Raul brought back were accurate. Man has gone through a wide range of beliefs about Mars, from the days of Schiaparelli and his *canali,* and Percival Lowell who recorded several hundred and figured them the work of intelligent beings. Early observers thought the *maria,* or green areas, were oceans, and later observers, patches of vegetation. It wasn't until fairly recently that we came up with the belief that the planet's reddish color was due to red-brown nitric acid gas in its thin atmosphere, and that the polar caps were solid masses of the white solid form of nitric acid. And, of course, that wasn't the reality either."

"All right," she said impatiently. "But you had got to the point where you landed."

"Yeah. And our jinx dogged us. In the landing, one of the skids folded and in the attempted repair Raul got his injuries. Actually, they probably saved his life since he was relegated to the ship, and the rest of us were left to explore and to attempt to jerry-rig a launching skid. Weight had limited us to two spacesuits, but the remaining five took turns working outside and exploring."

She said, "When did you become aware of the fact that there were"—she shuddered as though nauseated—"Martians?"

"Two minutes after we sat down," he said. "As soon as we were in a position to look. There were signs of intelligent life. Old, old, which threw us off, especially in view of the fact that life upon the surface, certainly life as we knew it, was unlikely without such equipment as we possessed—our ship and spacesuits."

Ben Fullbright thought back a long moment, and shook his head meaninglessly. "At any rate, we weren't able to get off in time to make our next leg to Venus. It was a matter of staying on Mars the four hundred and fifty-five days until we could return directly to Earth, and we didn't have the resources for six men for that period."

Dorry Flavelle shuddered. "I remember listening to your broadcasts before your set went dead. All the world was listening. It contained more pathos—"

"Yeah," Ben sneered, "more people must have been getting their jollies out of our suffering than anything since the Roman games."

"You're impossible," she said contemptuously.

"Yeah. So one by one we died. Larry Tinker and poor old Gus Bjorsen must have figured out about the same time that there'd be enough food and oxygen for only one or two. So they killed each other."

"You mean they sacrificed themselves—?"

"No. I didn't mean that at all. Each was trying to assassinate the other, to get his share of the supplies. A few days later, Jake Levy made a mistake in one of the spacesuits while trying to explore over in the direction of some crumbled buildings that must have gone back God only knows—tens of thousands of years, I suppose. When we got him back to the ship, he was gone. Pierre Dusage committed suicide, figuring that there wasn't enough supplies for even the remaining of us. He was the kind of guy who could do something like that."

He poured some more of the whisky. "So Raul and I were left, and Raul wasn't in very good shape. I should have knocked him over the head for the sake of the remaining supplies."

"I'm amazed you didn't!"

"So am I. At any rate, we would have been better off if Pierre hadn't suicided. He was our hydroponics expert as well as captain. Although any of us should have been able to have handled the pumpkin plants for our oxygen supply, and the rest for augmenting our food, something went wrong and we faced a considerably earlier death than we'd supposed. We solved the problem later, but at the time we thought we were goners."

"When did the Martians capture you?"

He looked at her. "Never," he said, his cynicism there again. "The jig seemed to be up. On the face of it, we'd both be crisp in another couple of weeks, so, Lord only knows why, we decided to try and make it to that pile of beat-up ruins in the distance. It was pure inspiration, precognition, or what have you. I rigged Raul up as best I could and we took off."

"And that's where the Martians got you?"

He grinned mockingly at her. "You keep using the wrong term. That's where the Martians *rescued* us."

She snorted contempt.

Ben said, "The buildings had once been an entry-exit point to their underground—well, I wouldn't call them cities. The underground areas in which they lived. I don't know what Mars was like a hundred thousand years or so ago, but once, at least, they'd spent more time on the surface."

For the first time a trace of compassion, an attempt at understanding, was there in Dorry Flavelle's voice. "And they tortured you."

"To the contrary. They were fascinated with us. Raul, was in bad shape, but they did what they could for him. Between their equivalent of doctors, and my own knowledge of emergency treatment, Raul survived, though not usually in his right mind." Ben Fullbright grunted sour amusement. "Or maybe that *was* his right mind. At any rate, he was continually expecting them to do us in, one way or the other. He was horrified when I began to learn the language. By the way, wasn't anybody here on Earth even a bit surprised that they had a language?"

"What do you mean? Why?"

He said wryly, "A spoken language presupposes a voice box, a tongue, ears, a— Oh, forget about it. At any rate, while Raul shivered and shook in his bed, expecting somebody to do something utterly-utter to him, I slowly learned to communicate."

"But they must have been horrible!"

"In physical appearance? Of course they were. What would you expect? If we super-dooper Caucasians think of such fellow Earthlings as, say, the Pygmies of the Ituri Forest, as being horrible looking, you can imagine how Martians must appeal to our aesthetic sense."

Her eyes shifted slyly to the handbag which she had put down upon the table immediately after her arrival.

"The story is getting long. Suffice to say that we were given enough freedom that I was able to patch up the landing skid." He thought back. "I thought I was being pretty slick about it. At the time, they had no knowledge of the possibilities of space travel whatsoever."

"You hadn't taught them as yet, eh?" she said, contempt there again.

He nodded. "No, not yet. At any rate, when Earth was in opposition again, I managed to truck Raul out to the ship, secretly. He was as well as he was going to get and competent of jockeying the *Ares* back to Earth, if he didn't go batty from space cafard along the way."

She looked at him strangely. "Are you contending that you *helped* Commodore Murillo to get out to the ship and escape?"

"Yeah," he said sourly. "That's what I'm contending. I understand he told a somewhat different story."

"He reported that he had pleaded with you to come along and you refused."

"That part of it is right. I decided not to go." Ben caught her eyes drifting to her handbag. He came suddenly to his feet and in two quick strides reached the bag and took it up.

Dorry squealed and started toward him, but he turned a cold eye on her and she stopped and stared her hatred.

"And just when I thought we were beginning to get along," he muttered, opening the bag. "What is this?"

Her head was high, nostrils wide. "A dictater," she said evenly.

"A *what?*"

"A device that takes dictation."

"And you've been taping everything we've been saying?" He eyed the tiny gadget, surprised at its size. "Where's the tape go?"

"There isn't any tape," she said evenly.

The cold went through him. He reached out quickly and seized her arm and squeezed. "Where's it being recorded, then?"

"Let go of me, you *turncoat.* It's being recorded in my office."

His hand tightened its grip on her, and he stared, disconcerted, at the small device. "Your office! Who might be reading it there? Answer me!"

"My secretary . . . I hope!"

He shot a quick glance out the window. It was growing dark. He let go of her and his lips thinned back over his crooked teeth. "She wouldn't be working this late, would she?"

She shrugged angrily.

"But I'd better get out of here, anyway." He leered at her. "Darn the luck, I was figuring on spending the night."

"I would have *killed* you."

"Or vice versa," he grinned. He pushed her back into the chair and began searching the studio-apartment, opening closet doors and rummaging in her bureau. He finally came up with an overnight bag, began packing the spare clothing and toilet articles he'd appropriated in Murillo's penthouse.

As he hurried, he continued to her. "Sorry I can't finish the yarn in detail at this time. Briefly, I decided not to return with Raul."

"Why?" she demanded. In spite of herself, Ben Fullbright was beginning to intrigue her.

"Because I didn't know enough about the Martians, as yet, for the project I already could dimly see must be accomplished."

"Just what *are* you interested in?"

He grabbed up her bag and lifted the credit card from it. His hatchetface twisted into its habitual sneer. "Couldn't you guess? Nothing interests me much any more except the conquest of the human race, or possibly its utter destruction."

Even though he was who he was, the statement set her back in disbelief. "You're insane!" she blurted. Then, "Undoubtedly, however, your Martian friends will do their utmost to accommodate you."

He grinned mockingly. "Oh, don't misunderstand, Miss Flavelle. You've been missing the point I've been trying to make this past hour and more. You see, the Martians are members of the human race, too."

They flushed him twice during the next week. The first time he managed to disappear into the mobs of passengers erupting from a vacuum tube underground station. The second time, he shot his way out leaving one dead and two wounded.

Since the advent of the TwoWorld government and the substitution of universal credit cards for money, crime had fallen off dramatically. Thus it was that the officials had to turn to emergency volunteers in their efforts to apprehend the most wanted criminal Earth had ever produced.

It should have been impossible for Benjamin Fullbright to have hidden himself, without friends and without resources. But somehow he did.

In frantic efforts to hunt him down, all clues, all tips were followed through and it was thus that the squad of three inept manhunters were sent, grudgingly, to investigate alleged strange noises in the Museum of Space.

There was a wry twist in the fact that the fugitive had chosen to hide himself in an early space capsule. From the litter it contained, it was obvious he had been there for several days at least, undoubtedly sneaking out at night to find food and drink.

He came out shooting, killing the group's leader, cowing the other two whom he had nicked before they had been able to bring their own weapons into the fray. Then he had relieved them of their firearms and their credit cards.

And after stripping his hunters of their possessions, he had slapped one stingingly across the face and rasped, "Ask them this. *Who built the satellites?*"

With that he was gone, leaving the two wounded, and the assistant curator who had been their guide, so bound that they wouldn't be released until morning.

It wasn't that the dramatic elements of the chase of Benjamin Fullbright weren't already at their height. The original story wasn't quite so cut and dried now.

When Raul Murillo, wasted physically, all but demented from his experiences and his privations during the one-man crossing of space, had returned alone from the Mars trip, it had been blacks and whites.

Awarded the greatest hero's welcome of all time, his story had come out in bits. And from beginning to end Ben Fullbright had been the villain. It was he who had made mistakes leading to the disaster after the landing. It was, Murillo at least hinted, Fullbright's fault that Tinker and Bjorsen had killed each other, and possibly the reason Captain Dusage had committed suicide. *If* he had committed suicide.

Somehow, the others all dead, the two of them had made it to the entry to the Martian underground and were there captured by the nauseous looking inhabitants of Earth's sister planet. Murillo's tale had become increasingly chilling then. The living habits of the monsters, the things they ate, their abstaining almost entirely from water so that Raul Murillo was forced continually to beg for the life giving fluid.

And Ben Fullbright's early turning traitor. His spending the sum of his waking hours learning to communicate, cooperating with them in every manner. Even to the point of teaching them the basics of space travel. Even to the point of taking them out to the spacecraft and demonstrating it. To the extent he was capable, Ben Fullbright had turned over to the monsters Earth's science.

Then the dramatic escape! Raul Murillo had slurred over the method by which their spacecraft had been repaired, somehow giving the impression that it was through his own efforts. The dramatic scene when Murillo and Fullbright had worked their way out to the craft, and then Fullbright had revealed he had decided to remain with the Martians. Murillo had even demeaned himself to the point of pleading, pointing out that their chances of making it would be considerably better with two to crew the *Ares.*

He had made it clear that his big motivation was to get the Earth traitor away from Mars before he could betray his species even further.

Murillo had been received on Earth as the hero he was. And, confronted now with the realization that there was a potential enemy in the Solar System, man had solved problems that had evolved over the centuries. World government became an overnight reality. The TwoWorld state, uniting East and West, in spite of socio-economic difficulties, was inaugurated. The first steps toward defense against an enemy from without were taken. The military potential of the world was directed against an alien foe, rather than toward fellow man.

And then came the return of Benjamin Fullbright, accompanied by two of the alien monsters of Mars.

The first radar reports were received with a chill of apprehension. It had been but a few years since Raul Murillo's own return in the *Ares*. His testimony had been that the Martians were without knowledge of space travel. But here they were!

There was but one answer.

The race traitor, Benjamin Fullbright, had coached them to the point of equaling the knowledge of his own Earthling species.

A thousand rocket interceptors had taken to the air, then off into space for their few moments of maneuverability outside the planet's atmosphere. They were inadequate, true, the equivalent of the military aircraft of 1914 in World War One, but they were all the defense the TwoWorld government could mount at this point. More efficient craft were on the drawing boards, space transports, space cruisers, space destroyers; but far from being in production.

However, the incoming ship was but one, and it carried only the Earth traitor and his two alien companions. The interceptors managed to bring it down, miraculously without killing Benjamin Fullbright who parachuted out, though his less strong companions burned to cinders in the crack-up.

Earth had been in a frenzy. Only the pleasure of *all* being able to participate in his judging prevented him from being torn to pieces preliminary to being brought to trial.

But now this.

His escape had brought questions to mind. Especially since for the first time, in his conversation with Dorthea Flavelle, he had brought up matters that should have been thought of long since.

How had Murillo escaped, if he was as ill as all that?

How had the hero managed to repair the spacecraft, supposedly with the aid of the Martians—who else?—if he couldn't communicate with them?

What motivated Ben Fullbright? Was he simply mad? None of the psychiatrists who had examined him had so contended.

Above all, why had he returned to Earth? Surely he must have known that Raul Murillo, now promoted to commodore, now bearer of the World Medal of Honor, would have reported on his collaborating with the enemy. For that matter, in his early questioning by Earth authorities, Fullbright hadn't denied it. That was in the first stages of interrogation, before he had gone silent and after protesting that he wasn't being listened to, that his interrogators were already prejudiced.

And why had he brought the two Martians with him? On the face of it, his attempted explanations, interrupted though they were, badgered as he was, didn't make sense. He'd had to teach them all he knew of space know-how in order for them to have built the craft in which he had returned. It couldn't have been an escape—since he had brought two of them along.

But it was the very last question that Ben Fullbright had asked, there in the space museum, had so brutally demanded an answer to, that had rocked the world.

Who built the satellites?

And his last statement to Dorthea Flavelle. Happily, the whole conversation had been taped. It could be gone over and over again.

It simply hadn't made sense. That nothing interested him any longer except the complete conquest or destruction of the human race. Up until that point, his conversation hadn't seemed that of an insane man. And then, the second bombshell. His contention that the Martians were human. What was that supposed to mean?

So Ben Fullbright, the Earth traitor, was being sought by every means that could be brought to bear. But he was wanted alive, now. His death could wait. His death he had earned a thousand-fold, even before his murder of Raul Murillo and the others, but it could wait until some few things were known of the truth of the journey of the *Ares* and until he revealed some more basic knowledge of the nature of the Martian monsters.

But Ben Fullbright had pulled a fast one. In the early stages of the manhunt his pursuers had been secure in the knowledge that at least he was confined to the island that once had been Great Britain.

The extent to which he could use the credit card he had stolen from Dorthea Flavelle was limited. The computors were watching for him. Every time the card was utilized, only minutes elapsed before the amount was credited and the source where he had used it pinpointed so that flying squads could be sent to the neighborhood. He had remained then in Great London, occasionally making a quick descent on an automated cafeteria during an off hour. But it was a desperate game.

However, with the credit cards of the three volunteer manhunters in his possession, and without the knowledge that he had them in his pursuers' knowledge, until the survivors were released from their bonds in the morning, Ben Fullbright had managed to cross the channel.

Thus it was that he was able to present himself in Paris at two o'clock in the morning at the home of Professor Georges Dusage, on the Boulevard de Menilmontant and immediately across from the Cimetière Du Père-Lachaise.

He made no effort to conceal his identity but merely stood before the video-screen on the door and pressed the bell. In spite of the hour, the response was no more than five minutes in coming.

Georges Dusage was not a young man. He had arrived at an age when he clung to the vestiges of yesteryear, as though protesting changes so rapid as to be confusing to a scholar who preferred to withdraw into his subjects. Thus it was that he affected a flannel nightshirt and more ludicrous still, a nightcap. He opened the door and looked for a long moment at his visitor.

The professor said, his English excellent, "Come in Benjamin Fullbright. I have had a . . . a premonition that you would come here."

The fugitive entered a hallway furnished in the tastelessness of late Victorian. "Down there," Dusage said evenly, indicating the closed door of a room. "My household is asleep."

Ben Fullbright, obviously physically exhausted, entered the room and found it a study. It could also have been a museum of the period only shortly after the Second Empire.

However, chairs meant for libraries had been as comfortable in the era of Napoleon the Little as they were a century later and Ben Fullbright sank gratefully into one before raising his eyebrows to his host. He ignored the heavy old-fashioned military revolver the other had trained on him.

He said, "Why did you think I would come here?" His eyes went wary. "Did you tell anybody you were expecting me?"

The elderly man shook his head. "No. It was just that I felt there might be an answer to my prayers."

Fullbright twisted his mouth wryly. "So you believe in Gods, eh?"

"No," the other said simply. "And now, have you *anything to say before I kill you?*"

"Yes," Ben said. "Did you love your son, Pierre?"

For the first time since the race traitor had appeared at his door, the older man's face broke. Without answer, his finger began to whiten on the trigger.

"So did I," Ben Fullbright said. He closed his eyes and sank back into the chair as though incapable of holding off sleep longer.

Minutes passed. The aged scholar said at last, "Why . . ." and then stopped, his voice choked.

Ben Fullbright said, "Sit down, sir. Do you think I would have put myself at your mercy, unless I had something worth saying?" He took an exhausted breath and said, off subject, "I haven't slept in the proper sense for ten days."

The old man sat down on the couch across from him but the gun was still firmly held.

Ben Fullbright said, "Do you believe, professor, that the ends justify the means?"

"My ethical code is on a somewhat higher scale, Benjamin Fullbright. Please get to the point. You are talking for your life."

"I do. And I think further that this fact is the greatest burden laid on the conscience of man. To achieve an idealistic end, man must sometimes utilize means at odds with his very ideals."

The professor said testily, "The kulaks, back in the early Twentieth Century, stood in the way of Stalin's ends, the industrialization of Russia. So he butchered numbers of them estimated into the millions. His ends were eventually realized. However, for the kulaks involved, the end *was* the means he utilized. Their end was premature death."

"A good example." Ben nodded. "Perhaps an even more horrible one is Hitler's final solution to the Jewish problem. In the name of his ends, the dominance of what he called the Aryans over what he called the inferior races, he ordered their liquidation." He sighed again and looked into the older man's face. "As I said, the greatest burden laid on man's conscience is that he can sometimes be faced with achieving his idealistic ends only by utilizing means he is opposed to."

The professor joggled his gun slightly. "You are talking for your life, Benjamin Fullbright."

The fugitive nodded. "I know it. Professor, do you believe that ultimately right triumphs, that justice prevails?"

Georges Dusage blinked rheumy eyes. Was this race traitor taking him seriously? Should he end this farce now, immediately, with the slightest of pressure on the trigger of his weapon?

He said slowly, "Yes. Perhaps an example is the fact that you have been delivered here into my hands."

Fullbright was shaking his head. "No, sir. Justice does not necessarily triumph, not even in the long run. Let me use but one example. You will recall Tamerlane, the Fourteenth Century Mongol whose conquests at one time stretched from China to Europe. On one of his campaigns, in what is now the waste of Afghanistan but was then one of the richest areas of the world, he came to the walls of a city known widely for its well being and which boasted a population of some one half million persons. It was early in the campaign and Tamerlane wished to set an example for later towns to note. This city, mind you, had provoked him in no manner whatsoever; he had simply decided to assimilate the area. He sent his emissaries to the town and demanded its capitulation and they were refused. The town was well victualed, its citizens valiant and determined, and right obviously was on their side. Tamerlane ordered the assault, carried the walls and butchered the entire population, men, women and children, without a single exception. He had killed every animal in the city, even mice. He had his soldiers level the entire town, carrying off the building material to distant places and burying it. He had the area on which the city had once stood plowed over and sown with grass. He then issued a command under his name that anyone, anywhere, who ever uttered the name of the city, or in any way referred to it, was condemned to die."

Ben Fullbright came to the end of his story and looked at the old man, who was staring at him, uncomprehending.

The younger man finished it up. "Professor, to this day, nobody knows the name of that city, nor its once location. If justice triumphs, when is it going to get around to triumphing for the inhabitants of that city, in their conflict against the brutal conqueror, Tamerlane, who, by the way, died in the fullness of his years, at the height of his glory, in bed, surrounded by every comfort."

The professor shook his head. "You are making no sense, Benjamin Fullbright. But I know this. Six men crewed the *Ares* when it reached out for Mars. My son died in the attempt. He deliberately took his life so that the survivors would have sufficient supplies to last until another attempt could be made to return to Earth. Two of the crew eventually did return. One of these, a hero broken in health by his ordeals, was murdered in his turn by the second, who had turned traitor to our whole species. You have few words left before I revenge my son, Benjamin Fullbright."

The younger man curled his lip in scorn. "And I repeat, that the ends can sometimes justify the means, and also that justice does not necessarily triumph, professor."

"You make no sense!" The trigger finger began to tighten.

Ben Fullbright said, "Who built the Satellites?"

"The question at this point doesn't particularly interest me."

"It should. Pierre Dusage laid down his life so that I could finish the job he saw had to be done. If you press that trigger, it is you who are the traitor to our species."

The old man sagged, and for the first time the gun sank so that it was no longer trained on his visitor's body. He said, so low that the other could hardly hear his words. "Tell me how my son died."

Ben Fullbright's mouth twisted but not in its habitual cynicism. "Even with half the crew dead, we still hadn't the supplies to last until next opposition and then for the remaining trip. So Pierre and I talked it out one night. He was a big man, I was small. It took less to keep me going than him. He pointed out, too, that it was going to be necessary to eliminate Raul Murillo. One man could get the ship back, but there wasn't enough for even two. I failed Pierre there. I couldn't do it."

The professor's voice was strong again, enraged again. "You lie! You say Pierre contemplated killing a man in his sick bed?"

"I'm not saying exactly that, sir. You see, Pierre knew who must have built the satellites. And reluctantly he came around to the belief that the end justified the means —at least in this case."

"You are mad! You keep speaking of these artificial satellites. Why? Obviously the Martians must have built them."

Ben Fullbright was reasonable. "They didn't even have the ability to construct a simple spacecraft. Nor did they have any traditions to suggest they were ever so capable." Fullbright twisted his mouth. "The satellite Phobos is some ten miles in diameter, professor."

"Zut! But will you get to the point, *imbécile?* What are you saying?"

"So at last someone has got around to asking me that question, eh? At long last. Very well, sir. The artificial satellites were constructed by whoever or whatever it was that seeded Earth and Mars. It was Pierre's belief that they are still in operation."

"Seeded Earth and Mars? You are truly mad!"

Fullbright shook his head. His extreme exhaustion was catching up with him again. For a time, under the pressures of his conversation with the older man, he had risen to the occasion, but now he felt the end was in sight, and could barely hold out.

"There is no other manner of explaining the fact, sir, that both Earth and Mars support *Homo sapiens.* Perhaps the Martians are not truly *sapiens* but some other species of the genus *Homo.* I am not sure. However, the Martians are human. That should have been obvious when Murillo returned, having been sustained on Martian food, cared for by Martian medical methods, and reported that I had learned the language of the Martians. Evidently, it didn't get through. In spite of the fact that we have been speculating on the possibility of intelligent life elsewhere for centuries, we never really *believed* that it might be true. Probably because admitting other intelligent life leads to the corollary that it might be *more* intelligent than we—and that is insupportable. Our ego won't take it. As a world we became fanatic. No voice of peace was raised. The most lurid descriptions of a man who was obviously mentally upset were taken at full value. Nobody wished to hear anything else other than that the Martians were monsters who must be destroyed. When I returned, I was attacked before it could ever be ascertained why I had returned bringing with me two Martians. Two Martians, I might add, that I had taught English."

Professor Dusage was not a fool.

He said, very slowly, "You are saying we are faced by a potential common foe. The Martians you brought were ambassadors from one branch of our race to another—"

It was then, like a curtain drop, like a well plotted climax enacted on a legitimate stage, that the police broke in from two different doors, weapons in hand, and overwhelming in number. Behind them, on the verge of hysteria, stood a gray haired woman, clad, as was her husband, in the night garments of half a century and more ago. She was screaming the police to haste, her arms waving dramatically.

And Benjamin Fullbright had no resources left with which to resist. They swarmed over him in mass so great that they largely hindered each other's efforts, which mattered little except that their quarry took a needless amount of banging and bruises.

Professor Georges Dusage glared at his wife. "*Fermez votre bouche!*" he roared. "You have done enough!"

Ben Fullbright, not bothering to struggle, was hauled to his feet, two uniformed gendarmes on each arm, another one with his gun barrel buried in the small man's back, still another frisking him in front. He grimaced. "I wish I could have finished," he growled.

Georges Dusage looked into his eyes. "You will be heard, *Monsieur.* That I guarantee. And *le bon Dieu* have mercy upon you if you lie."

It was not as easy as all that. Instilled propaganda is not so simple to wash from a single brain. Try to make an atheist of a devote Christian, or a Christian of a devote atheist. To wash it from the total membership of a species numbering more than a dozen billion was an unprecedented task. And so it was that when at last Benjamin Fullbright was given his opportunity to speak, he couldn't know how large a percentage of his audience-jury was still of the mind not to listen and were interested only in his death.

It had been difficult enough getting to that point. To the point of a hearing.

In the early stages following his capture, he had been mauled and hauled, shuffled from this point to that and from one authority to the next. From the local gendarmerie of the *Onzième Arrondissement,* to the Parisian *Commissariat de Police* where he stayed for twenty-four hours, but hardly rested. From Paris to Geneva where the subdivision of the TwoWorld state known as Europe fought for his possession against officials from North America, the section of his birth, and from representatives of the ultimate authority of the TwoWorld government based in Great London.

And while they battled over the privilege of executing him, his small adherents went to work.

Dorthea Flavelle had made her name in the burst of glory that had been hers following her lengthy interview with the race traitor. And in the making had her own second thoughts. So it was that she sought out Professor Georges Dusage and compared notes with that valiant. Her articles now, no matter how cross grained they cut, were of the highest demand; her appearances on the telly screen, no matter how controversial her words, drew capacity audiences.

And Professor Dusage was the father of the hero who had captained the *Ares,* the second person to converse at length with Ben Fullbright, a member of the *Academy,* a sub-minister of education. A man who was to be heeded.

And here and there piped up other voices which had remained quiet before in the face of universal hysteria. Voices that asked, and over and over again, the questions that Ben Fullbright had raised—and never answered in detail.

Benjamin Fullbright himself had sunk back into the silences, refusing to communicate with his captors, no matter what the rank. As the days went by, the questions became more intelligent, more the type they should have asked long ago when first he had returned. But still he kept his peace.

So it was that eventually he was returned to Great London and eventually to the courtroom from which Raul Murillo had dubiously rescued him. And so it was that before his entry into the court where he would be on lens to such extent that every citizen of the TwoWorld, whether on Earth itself, on Luna, or of the orbiting satellites, could follow him. And, as before, their vote would be the deciding factor.

The Space admiral who had briefed him, in a small anteroom, had pulled no punches.

"Fullbright, for all practical purposes the trial is to be resumed where it was interrupted by Commodore Murillo. In short, the summation period is now on the agenda. Your full story will be heard. How it will be received, I cannot say. In the past month such supporters of your story—to the extent that it's been heard at all—as Professor Dusage and reporter Dorthea Flavelle, have gone far toward laying a foundation. There must be many in your audience-jury who are at least keen to hear you out. I'm not sure just how I stand myself, Fullbright, however, I realize that you're not a flat. All right, this is your opportunity. Go on in and utilize it." The admiral shrugged stiffly held shoulders. "If you can convince them that your story of the Martians being human and you bringing them here as ambassadors of good will, is correct, then possibly your neck has been saved."

Ben Fullbright had been standing before the other. Now his mouth twisted cynically. He said, "I didn't have time to finish my story to Professor Dusage. He leaped at conclusions. I never contended that the two Martians with me were ambassadors, or that the Martians have any intentions of joining up with us."

The Space admiral gaped.

There were only slight changes in the courtroom. The presider was the same and the chief video-technician. The prosecutor was Frol Rublyov and Antony Duff-Warwick sat at the defense table with his associates from the World League for Civil Rights. At the table, too, sat Dorthea Flavelle and Professor Georges Dusage.

There was an air that was different, Ben Fullbright decided sourly. The presider's manner was slightly less coldly aloof, and for that matter so was Frol Rublyov's less assured. Even the Russian sensed that the prisoner had words to say worth the hearing. Well, the words they were expecting were not a-coming.

The preliminaries were short. As the Space admiral had indicated, the defense made no offering other than the summation. Twelve billion and more in the audience-jury had no patience for continuing on the basis of the original trial.

Professor Dusage, at the far end of the defense table, gave Ben Fullbright a curt nod when he entered. Ben answered, just as abruptly.

Before sitting down, he stopped for a moment before Dorthea Flavelle. "Thanks for coming," he said.

She grinned ruefully. "Remember? A good word for Stalin, Hitler, Jack the Ripper. Always for the underdog."

He had to laugh and his thin, hatchet-face for a moment was that of a wistful boy. It was the first time that she, or anyone else in that court had seen Ben Fullbright express honest amusement.

Dorry Flavelle said, her voice strange, "You should laugh more often . . . Ben."

He matched her rueful grimace of a moment before.

"Things should happen to me more often that are laughable." He turned and took his own chair.

When Ben Fullbright stood finally, facing the presider's bench and the telly lenses, his less than attractive face worked in that inadvertent manner of mockery that his viewers had learned to hate, and enjoyed hating, long before.

He said, "There are few who are going to like what I have to say. I wonder if most of you will accept it."

The presider said unctuously, "We are listening, Benjamin Fullbright. You are in your summation and by World law none can interrupt."

Ben Fullbright ignored him and looked full into the lenses. "It is no use reiterating what you've already learned through what has gone before, what Raul Murillo"—he twisted his mouth here—"has already reported, what little you've learned from me, what Miss Flavelle has written, so much of which is inaccurate—"

Dorry Flavelle bug-eyed him.

He went on "And what Professor Dusage has passed on —much of which he misconstrued." The speaker threw a glance at the old man whose lips were now white and thin.

"But I'll sum up the preliminaries."

The prisoner took a deep breath, as though dreading what was to come. "First, I need not prove that the satellites of Mars, Deimos and Phobos, are artificial and the product of some highly evolved intelligent life form. The Russian probe in the *Cosmocraft Mars* proved that with photographs. Nor need I go into detail on the fact that the Martians which the late Commodore Murillo and I contacted are members of the *genus Homo*, if not the species *sapiens*. If I am not mistaken, this has finally been accepted by our scientists. It was the fact that they had adapted to the peculiarities of Mars, especially in regards to the need for living below surface, that set Raul Murillo off so far.

"Ugly, by our standards, the Martians are. They are also human, and also intelligent. Those that deny this, might have brought to mind that in a few years they were able to assimilate what I could teach them of space travel and produce a craft capable of bringing three men across the void to Earth. Their intelligence had been channeled into different directions than our own, but intelligent they are if we like it or not."

He snorted wry humor. "I come to the germ of my message here. We Earthings have a habit of undervaluing the intelligence of those we dislike. We've done it all down through history, in, for instance, our conflict between the races, each convinced it is superior to all others. Another example took place when the world was still split into camps, before the advent of the TwoWorld state. It came as a shock to the West when the Soviets first exploded their nuclear bomb. Refusing to admit that Soviet scientists were as intelligent as Western ones, various excuses were found, among them that Russian spies had stolen West A-Bomb secrets. A better example still was when the Soviets were first to launch a satellite into orbit, although the West had been the first to *boast* that they were going to do so. Once again the alibis came out. It was actually captured German scientists who had done the work that led to Sputnik. Of course, it was the West, not the Soviets, who had taken over the best of the German rocket scientists and utilized them for space research—but that our citizenry couldn't bear to hear.

"At any rate, we have a tendency to think our opponents inferior to ourselves, particularly mentally.

"Let's assume then that it is accepted that the Martians are both human and intelligent. But though intelligent they do not have the ability, nor is there any reason to believe they ever had it, to cross space and colonize Earth. Any more than it is possible that we Earthlings, in the past, built spacecraft and colonized Mars. Nor have either been capable, and aren't capable today, of building such artificial satellites as Phobos and Deimos."

His expression was sour amusement again, his face easy to hate, as always. "Which can lead us to only one conclusion. Both planets were seeded from elsewhere in space—probably from some other star system. And by the same intelligent life form that built the satellites and left them there, how many millennia ago, I wouldn't guess.

"The question then becomes, why? The answer of Pierre Dusage was that both Earth and Mars were primitive when the aliens from space first landed. A conquering people is not interested in barren wilderness, nor ultra-primitives for exploitation purposes. A highly developed civilization has no use for unskilled labor. The Roman Empire never expanded south into the far reaches of the Sahara because it was profitless, nor did the early Chinese into the Gobi.

"So Earth and Mars were seeded, and two large artificial satellites left to revolve around Mars, down through the centuries. Why? Captain Dusage suspected that they were still operative and automatically reporting to someone, or something, somewhere. The corollary is obvious. Some day the alien life form that seeded our planets plans to return." Fullbright sneered sick humor. "Perhaps they are benevolent.

"A question intrudes here. Why were two spy satellites left in orbit about Mars, but none for Earth? We can only guess. Possibly there originally was such a spy craft, but, possibly caught up in the interaction between Earth and our binary system with Luna, it failed sometime way back and plunged either into our oceans, or possibly into Siberia or Arizona. Perhaps this even happened in historic times; we have various legends and even Biblical accounts of such events as the destruction of Sodom and Gomorrah by a rain of fire from the skies."

He seemed to switch subjects. "When the Spanish came to the Americas, they found three civilizations. The Aztecs, Mayans and Incas had developed in various fields, but they were far behind in the military sciences. So far behind that they had no conception of conflict in the European sense. Their simple wars were fought largely to take prisoners to sacrifice to the Gods. Nor had they achieved to the ethnic period where they understood the institution of private property. As civilizations, they were destroyed before they ever realized what it was that the conquistadors wanted—that is, to enslave them and to steal their possessions. Had the Spanish been more far-sighted, less contemptuous of the people they thought their inferiors, they might not have burned the Mayan books, nor destroyed the advanced art of the Aztecs and Incas. They might not have scorned the advances the Indians had made in medicine, the calendar, in agriculture and various sciences. Indeed, the average Peruvian and Mexican of that time ate better and in general enjoyed a higher standard of living than did the average European. However, the Spanish destroyed almost all."

Once again he switched subjects. "Under the influence of the reports brought back by Raul Murillo, Earth united in the face of what it saw as a common foe. Our long lasting Cold War was abruptly ended. The TwoWorld state became the government of the globe. And all Earth began to gird for war with Mars. What kind of a war would it have been?" He raised eyebrows cynically. "The same sort that the Spanish Christians waged against the pagan Indian civilizations. A war of destruction, so that the civilization of Mars would have been snuffed out in its entirety, under the rain of our nuclear weapons."

In spite of his unfortunate physical appearance, his dominating, mocking tone of voice, the courtroom had long since fallen silent. And somehow, in some mysterious wise, all those who sat within it could *feel*, could *know*, that a similar silence existed before those telly screens in a multi-billion homes, offices, factories, mines, in ships at sea, and air-borne passenger liners. For Ben Fullbright, at last, was getting through.

It was the summation period. But—no longer.

The presider leaned forward, the moment dramatic. Two telly lenses left the prisoner—no longer a prisoner, as all men knew—and zeroed in on him.

The presider said, "Benjamin Fullbright, I am humble before you, in knowledge of the terrible tribulations that have been yours in your fight to bring your message. You need not speak further for what I am sure is the immense majority of us . . ." He turned to the video-technician. "Please take the vote on what I have said thus far. Do I find support in the audience-jury?"

The panel burned green.

The presider, his moment of glory upon him, went on. "We know the rest, Benjamin Fullbright. In the face of unbelievable odds, and even with the opposition of your one fellow Earthling, Raul Murillo, you saw the need. You learned to communicate, taught our cousins of Mars in the sciences of Earth so that eventually we may co-operate, and then further, converted them to your way of thinking to the point where they built a spacecraft and sent, with you, two ambassadors to unite our sister planets!"

He broke off as applause from the courtroom drowned him. He shrugged smiling, and joined it. Prosecution and defense specialists, witnesses and even video-technicians beat their hands together enthusiastically, in a scene unprecedented in a trial under TwoWorld government law.

And Ben Fullbright stood there, waiting, his face falling into characteristic sourness. When they grew quiet, he spoke again.

"You still don't get it. The two Martians I had with me weren't ambassadors."

"Not ambassadors?" the presider said blankly.

"They were prisoners. I wanted to bring four of them, preferably some scientists, and almost brought it off, but I had to kill two in capturing them."

Again silence fell, so heavy as to be heard.

Ben Fullbright said impatiently, "I keep telling you that the Martians are human. Just as human as we are. They feel the same way we do—or did—when Raul Murillo first brought back his story of Martian monsters. Being human, they hate our guts. Hate the idea of there being another intelligence in the Solar System. Given the chance, they'd wipe us out."

"But . . . but—" It was Antony Duff-Warwick's voice, rather than the presider's. The presider was speechless.

Fullbright said, "I figured I could convince my own people easier than the Martians. The eventual enemy of us both is the space alien intelligence that seeded us. I have a sneaking suspicion that's why both planets were populated. So that we'd fight among ourselves if we ever got to the point of conquering the space that separated us, until the aliens could get here and take over."

Frol Rublyov registered complete confusion. "But what are you leading to?"

Ben Fullbright spread his arms. "I'm no dove of peace come flying back from Mars. We're going to have to conquer them. But we can't do it the way the Spanish conquered the Americas. We've got to do it quick and neat, killing as few of them as possible, and preserving whatever developments they have that we haven't. They've evolved a way of life that is particularly adapted to survival under minimum conditions. Great, we'll assimilate their developments, and then, when whoever it was that seeded Mars and Earth comes back, possibly we'll be waiting for them in strength."

He'd said all there was he had to say. Ben Fullbright looked up at the telly lenses and his mouth moved in sour apprehension. He was still on trial for his life, and he wasn't sure just how the audience-jury was going to vote. ■

satisfaction

DAMON KNIGHT

The one thing that all men will agree on is that they seek happiness. *Trouble is, they don't agree on the nature of the stuff.* But given the chance . . . would it be happiness . . . ?

There was a brisk little wind up here, flipping the white silk of his trousers like flags against his body, ruffling his hair. Two thousand feet down past the dangling tips of his shoes, he could see the mountains spread out, wave after brilliant green wave. The palace was only a hollow square of ivory, tiny enough to squash between thumb and forefinger. He closed his eyes, drank the air with his body, feeling alive all the way to the tips of his fingers and toes.

He yawned, stretched with pleasure. It was good to get up here sometimes, away from all that marble and red velvet, the fountains, the girls in their gauzy pants . . . There was something about this floating, this complete solitude and peace.

An insect voice said apologetically, "Pardon me, sir."

He opened his eyes, looked around. There it was, the one he called the "bug footman," three inches of slender body, a face half human, half insect, wings a blur—flying as hard as it could to stay in one place.

"You're early," he said.

"No, sir. It's time for your vacation."

"That's all I hear from you—time for my vacation."

"It's good for you, sir."

"Well, no doubt you're right."

"I'm sure I'm right, sir."

"O.K. Get lost."

The creature made a face at him, then veered away on the wind and diminished to a drifting speck of light. Gary Mitchell watched it until it was lost against the sunlit green background. Then he tilted lazily in the air, closed his eyes and waited for the change.

He knew to the second when it would happen. "Bing," he said lazily, and felt the world contract suddenly around him. The wind was gone; mountains and sky were gone. He was breathing a more lifeless air. Even the darkness behind his eyelids was a different color.

He moved cautiously, feeling the padded couch under him. He opened his eyes. There was the same old room, looking so tiny and quaint that he snorted with amusement. It was always the same, no matter how often he came back to it. That struck him so funny that he rolled over, closing his eyes again, shaken with silent laughter.

After a minute he lay back, emptying his lungs with a grunt, then breathing deeply through his nostrils. He felt good, even though his body ached a little. He sat up and stared at the backs of his hands with amused affection. Same old hands!

He yawned hard enough to crack the cartilage in his jaw, then grinned and heaved himself up out of the hollow half-egg-shape of the couch. Wires and tubing trailed from him in all directions. He pulled the cap off his head, breaking it free of the tiny plastic sockets in his skull. He dropped it, let it swing at the end of its cable. He unfastened the monitoring instruments from his chest, pulled off the rest of his gear, and strode naked across the room.

There was a click from the master clock on the control board, and Mitchell heard the water begin to hiss in the bathroom. "Suppose I don't want a shower?" he asked the clock. But he did; all according to routine.

He rubbed his palm over the stubble on his cheeks. Maybe he really should try to work out a gadget that would shave him while he was under the wire. A housing fitted to the lower part of his face, feedback to regulate the pressure . . . But the thing might be more trouble than it was worth.

Staring at himself in the mirror, he saw a glint of delighted irony come into his eyes. Same old thoughts! He got out the razor and began to shave.

The clock ticked again as he came from the bathroom, and a tray slid out of the conveyor onto the breakfast table. Scrambled eggs, bacon, orange juice, coffee. Mitchell went to the closet, took out pale-blue slacks and shirt, dressed, then sat down and ate, taking his time. The food was food—nourishment; that was about all you could say.

When he was done, he lit a cigarette and sat with half-closed eyes, letting the smoke spurt in two streams from his nostrils. Vague images drifted through his mind; he did not try to capture them.

The cigarette was a stub. He sighed, put it out. As he walked to the door, it seemed to him that the couch and the control panel were staring at him reproachfully. There was something abandoned and pathetic in the empty egg-shape, the scattered wires. "Tonight," he promised it. He opened the door and stepped through.

Pale, yellow-tinged sunlight came from the big picture window overlooking the East River. The philodendron in the ceramic pot had unfurled another leaf. On the wall across from the window hung an enormous abstraction by Kandinsky, upside down. Mitchell gave it an ironic grin.

Reports in their orange plastic binders were piled on one side of the long mahogany desk, letters on the other. In the center, on the green blotter, lay a block of soft pine and an open jackknife.

The red light of the intercom was blinking steadily. Mitchell sat down and looked at it for a moment, then touched the button. "Yes, Miss Curtis?"

"Mr. Price wants to know when you'll be available. Shall I tell him to come in?"

"O.K."

Mitchell picked up the top report, glanced at the sketches and diagrams inside, put it down again. He swiveled his chair around, leaned back and gazed sleepily out over the haze-yellowed landscape. A tug was moving slowly up the river, trailing puffs of yellow-white smoke. On the Jersey side, housing units stood like a child's building blocks; sunlight glinted from the tiny rows of windows.

Curious to see all that still here, still growing; on the other side, he had leveled it years ago, filled it in with jungle. There was something quaint about it now, like an old, yellowed snapshot. That was a little disturbing: coming back like this was always like re-entering the past. A faint sense of wrongness . . .

He heard the door click, and turned to see lanky Jim Price with his hand on the knob. Mitchell grinned, waved a hand. "Hello, boy—good to see you. Knock 'em dead in Washington?"

"Not exactly." Price came forward with his heron's gait, folded himself into a chair, twitched, knotted his thin fingers together.

"Too bad. How's Marge?"

"Fine. I didn't see her last night, but she called in the morning. She asked me to ask you—"

"Kids all right?"

"Sure." Price's thin lips compressed; his brown eyes stared earnestly at Mitchell. He still seemed about twenty years old; to look at him, he had not changed since the days when Mitchell-Price, Inc. was an idea and a back room in Westbury. Only the clothes were different—the two-hundred-dollar suit, the perfectly knotted tie. And the fingernails; once they had been bitten to the quick, now they were manicured and shiny. "Mitch, let's get down to business. Tell me, how is that deep probe gadget coming?"

"Got Stevenson's report on my desk—haven't looked through it yet."

Price blinked, shook his head. "You realize that project has been dragging on thirty-six months?"

"There's time," Mitchell said lazily. He reached for the knife and the block of wood.

"That's not the way you talked fifteen years ago."

"I was an eager beaver then," Mitchell said. He turned the block in his hands, feeling the little dusty burrs along the unfinished side. He set the blade against one edge, curled off the first long, sensuous shaving.

"Mitch, I'm worried about you—the way you've changed the last few years. You're letting the business slide."

"Anything wrong with the earnings reports?" Mitchell felt the cut surface with his thumb, turning to gaze out the window. It would be fun, he thought absently, to drift out into that hazy blue sky, over the tops of the toy buildings, still farther out, over the empty ocean . . .

"We're making money, sure," Price's thin voice said impatiently. "On the mentigraph and the randomizer, one or two other little things. But we haven't put anything new on the market for five years, Mitch. What are we supposed to do, just coast? Is that all you want?"

Mitchell turned to look at his partner. "Good old Jim," he said affectionately. "When are you ever going to loosen up?"

The door clicked open and a dark-haired girl stepped in—Lois Bainbridge, Price's secretary. "Mr. Price, sorry to interrupt, but Dolly couldn't get you on the intercom."

Price glanced at Mitchell. "Push the wrong button again?"

Mitchell looked at the intercom with mild surprise. "Guess I did."

"Anyway," the girl said, "Mr. Diedrich is here, and you told me to tell you the minute—"

"Where is he, in reception?" said Price standing up.

"No, Mr. Thorwald has taken him down to Lab One. He has his lawyer and his doctor with him."

"I know it," Price muttered, prying nervously into his pockets. "Where did I put those . . . Oh, here." He pulled out some notes scrawled in pencil on file cards. "O.K., look, Lois, you phone down and tell them I'll be right there."

"Yes, Mr. Price." She smiled, turned and walked out. Mitchell's mild gaze followed her. Not a bad-looking girl, as they went.

Price asked abruptly, "Do you want to sit in?"

"Want me to?"

"I don't know, Mitch—do you give a damn?"

"Sure." Mitchell got up, draped an arm around the other man's shoulders. "Let's go."

They walked together down the busy corridor. "Listen," Price said, "how long since you've been out for dinner?"

"Don't know. Month or two."

"Well, come out tonight. Marge told me to bring you for sure."

Mitchell hesitated, then nodded. "All right, Jim, thanks."

Lab One was the showcase—all cedar veneer and potted plants, with the egg-shaped mentigraph couch prominently displayed, like a casket in a mortuary. There were half a dozen big illuminated color transparencies on a table behind the couch, to one side of the control board.

Heads turned as they walked in. Mitchell recognized Diedrich at once—a heavy-set pink-and-blond man in his early forties. The ice-blue eyes stared at him. Mitchell realized with a shock that the man was even more impressive, more hypnotic than he seemed on television.

Thorwald, the lab chief, made the introductions while white-coated technicians hovered in the background. "The Reverend Diedrich—and Mr. Edmonds, his attorney—and of course you know Dr. Taubman, at least by reputation."

They shook hands. Diedrich said, "I hope you understand the terms on which I am here. I'm not looking for any compromise." The pale eyes were intent and earnest. "Your people put it to me that I could attack the mentigraph more effectively if I had actually experienced it. If nothing changes my mind, that's just what I intend to do."

"Yes, we understand that, of *course*, Mr. Diedrich," said Price. "We wouldn't have it any other way."

Diedrich looked curiously at Mitchell. "You're the inventor of this machine?"

Mitchell nodded. "A long time ago."

"Well, what do you think about the way it has turned out—its effect on the world?"

"I like it," said Mitchell.

Diedrich's face went expressionless; he glanced away.

"I was just showing Mr. Diedrich these mentigraph projections," Thorwald said hurriedly, pointing to the transparencies. Two were landscapes, weird things, all orange trees and brown grass; one was a city scene, and the fourth showed a hill, with three wooden crosses silhouetted against the sky. "Dan Shelton, the painter, did these. He's enthusiastic about it."

"You can actually photograph what goes on in the subject's mind?" Edmonds asked, raising his black eyebrows. "I was not aware of that."

"It's a new wrinkle," Price answered. "We hope to have it on the market in September."

"Well, gentlemen, if you're ready—" Thorwald said.

Diedrich appeared to brace himself. "All right. What do I do? Shall I take my jacket off?"

"No, just lie down here, if you will," Thorwald answered, pointing to the narrow operating table. "Loosen your tie if it will make you more comfortable."

Diedrich got up on the table, his face set. A technician came up behind him with a basket-shaped object made of curved, crisscrossing metal pieces. She adjusted it gently over Diedrich's skull, tightened the wing nuts until it fitted. She took careful measurements, adjusted the helmet again, then pushed eight plungers, one after the other.

Taubman was looking over her shoulder as she removed the helmet. At the roots of Diedrich's hair, eight tiny purple spots were visible.

"This is merely a harmless dye, doctor," Thorwald said. "All we are doing here is to establish the sites for the electrodes."

"Yes, all right," said Taubman. "And you assure me that none of them is in the pleasure center?"

"Definitely not. You know there is legislation against it, doctor."

The technician had moved up again. With a small pair of scissors she cut tiny patches of hair from the purple-marked spots. She applied lather, then, with an even smaller razor, shaved the patches clean. Diedrich lay quietly; he winced at the touch of the cool lather, but otherwise did not change expression.

"That's all of that," Thorwald said. "Now, Reverend Diedrich, if you'll sit over here—"

Diedrich got up and walked to the chair Thorwald pointed out. Over it hung a glittering basket-work of metal, like a more complicated and more menacing version of the helmet the technician had used.

"Just a moment," Taubman said. He went over to examine the mechanism. He and Thorwald spoke in low voices for a moment, then Taubman nodded and stepped back. Diedrich sat down.

"This is the only sticky part," Thorwald said. "But it really doesn't hurt. Now let's just get your head in this clamp—"

Diedrich's face was pale. He stared straight ahead as a technician tightened the padded clamp, then lowered the basket-shaped instrument. Standing on a dais behind the chair, Thorwald himself carefully adjusted eight metal cylinders, centering each over one of the shaved purple patches on Diedrich's skull. "This will be just like a pin prick," he said. He pressed a button. Diedrich winced.

"Now tell me what sensations you feel," said Thorwald, turning to a control panel.

Diedrich blinked. "I saw a flash of light," he said.

"All right, next."

"That was a noise."

"Yes, and this?"

Diedrich looked surprised; his mouth worked for a moment. "Something sweet," he said.

"Good. How about this?"

Diedrich started. "I felt something touch my skin."

"All right. Next."

"*Phew!*" said Diedrich. "A terrible smell."

"Sorry. How about this one?"

"I felt warm for a moment."

"O.K., now this."

Diedrich's right leg twitched. "It felt as if it were doubled up under me," he said.

"Right. One more."

Diedrich stiffened suddenly. "I felt . . . I don't know how to describe it. *Satisfied.*" His cold eyes went from Mitchell to Thorwald. His jaw was set hard.

"Perfect!" Thorwald said, getting down from the platform. He was grinning with pleasure. Mitchell glanced at Price, saw him wiping his palms with a handkerchief.

The cylinders retracted; the technician unfastened the headclamp. "That's all of that," said Thorwald heartily. "You can step down."

Diedrich got out of the chair, his jaw still set. One hand went up to fumble at his skull.

"Pardon me," said Taubman. He parted Diedrich's hair with his fingers and stared at the little gray plastic button, almost flush with the scalp, that had covered one of the purple spots.

Mitchell drifted over to stand beside Price. "Our friend didn't like that jolt in number eight," he murmured. "Careful, boy."

"I know," Price answered in an undertone. Across the room, Thorwald and the technicians had seated Diedrich in another chair and put the cap on his head. One of the technicians began showing him big sheets of colored pasteboard, while another, a pale young man with big ears, read dials and punched keys at the control console.

"This is a pretty big gamble you're taking, son," Mitchell said. "You know if we just make him mad, he can really smear us. How'd you get so brave?"

Price scowled, shuffled his feet. "Don't bury me yet," he muttered.

A technician was passing vials of scent under Diedrich's nose, one after another.

"Something up your sleeve?" Mitchell asked; but he had lost interest, and did not hear Price's reply. The technicians were walking Diedrich up and down, getting him to bend, raise his arms, turn his head. When they finally let him sit down again, his face was slightly flushed. Mitchell was thinking dreamily that he could use Diedrich on the other side—make a Teutonic knight out of him, noble, humorless and fierce. But reduce him to about half size . . . that would be funny.

"We won't try to calibrate the emotional responses this time, Mr. Diedrich," Thorwald was saying. "That's more difficult and complicated—it takes quite a while. But you've got enough here to give you a very good idea of the device."

Diedrich put up a hand to feel the cap on his head, the cluster of wires emerging from the middle of it. "All right," he said grimly. "Go ahead."

Thorwald looked a little worried. He motioned to the technician at the console. "Input one, Jerry." To Diedrich he said, "Just close your eyes, if you will and let your hands relax."

The man at the console touched a button. An expression of surprise crossed Diedrich's face. His right hand moved spasmodically, then lay still. A moment later he turned his head aside. His jaws made slow chewing motions. Then he opened his eyes.

"Amazing," he said. "A banana—I peeled it and then ate a bite. But—they weren't my hands."

"Yes, of course—that was a recording made by another subject. However, when you learn to use the other circuits, Mr. Diedrich, you can run that through again and change it until they *are* your hands—or make any other changes you like."

Diedrich's expression showed controlled distaste. He said, "I see."

Watching him, Mitchell thought, *He's going to go home and write a speech that will blister our tails.*

"You'll see what I mean in just a moment," Thorwald was saying. "This time there won't be any primary recording—you'll do it all yourself. Just lean back, close your eyes, relax and imagine some interesting picture, some scene—"

Diedrich fingered his watch impatiently. "You mean you want me to try to make a picture like those?" He nodded toward the transparencies ranged along the wall.

"No, no, nothing like that. We won't project it, and only you will see what it is. Just visualize a scene, and wherever it seems vague or out of proportion, keep on changing it and adding to it . . . Go ahead, try it."

Diedrich leaned back, closed his eyes. Thorwald nodded to the man at the console.

Price moved abruptly away from Mitchell, strode over to the chair. "Here is something that may help you, Mr. Diedrich," he said, bending close. He looked at the notes in his hand, and read aloud, "And it was now about the sixth hour, and a darkness came over the whole land until the ninth hour, the sun's light failing: and the veil of the temple was rent in the midst."

Diedrich frowned; then his face relaxed. There was a long silence. Diedrich began to frown again. After a moment his hands moved spasmodically on the arms of the chair. His jaw muscles lost their tightness; his chin dropped slightly. After another moment he began breathing quickly and shallowly, lips parted.

Taubman stepped over, frowning, and attempted to take his pulse, but Diedrich knocked his hand away. Taubman glanced at Price, who shook his head and put a finger to his lips.

Diedrich's face had turned into a mask of grief. Moisture appeared under his closed eyelids, began to run down his cheeks. Watching him closely, Price nodded to Thorwald, who turned toward the console and made a chopping motion.

Diedrich's tear-filled eyes slowly opened.

"What was it, Mr. Diedrich?" Edmonds asked, bending toward him. "What happened?"

Diedrich's voice was low and hoarse. "I saw . . . I saw—" His face contorted and he began to sob. He bent over as if in pain, hands clasped so tightly that the fingers turned red and yellow-white in patches. Edmonds and Taubman were hovering over him, concerned.

Price turned away, took Mitchell by the arm. "Let's get out of here," he muttered. In the corridor, he began to whistle.

"Think you're pretty slick, don't you, boy?" Mitchell asked.

Price's grin made him look like a mischievous small boy. "I know I am, old buddy," he said.

There were four of them at dinner—Price and his good-looking red-haired wife, Mitchell, and a girl he had never met before. Her name was Eileen Novotny; she was slender, gray-eyed, quiet. She was divorced, Mitchell gathered, and had a small daughter.

After dinner they played a rubber of bridge. Eileen was a good player, better than Mitchell; but when he blundered, once or twice, she only gave him a glance of ironic commiseration. She did not talk much; her voice was low and well modulated, and Mitchell found himself waiting for her to speak again.

When the rubber was over, she stood up. "I'm glad to have met you, Mitch," she said, and gave her warm hand for a moment. "Thank you for a lovely dinner and a nice evening," she said to Marge Price.

"You're not going already?"

"Afraid I have to—my sitter can only stay till nine, and it will take me a good hour to get up to Washington Heights."

She paused at the door, glancing back at Mitchell. He could well imagine how it might be with this girl—the long walks, the intimate little restaurants, holding hands, the first kiss . . . Price and his wife were looking at him expectantly.

"Good night, Eileen," he said.

After she was gone, Marge brought in some beer and excused herself. Price settled himself in a relaxer and lit a pipe. Squinting at Mitchell over the bowl, he said mildly, "You might have given the girl a taxi-ride home, old buddy."

"And start all over again? No thanks, old buddy—I've had it."

Price flipped out his match, dropped it into an ashtray. "Well, it's your life."

"So I've always imagined."

Price shifted uncomfortably in the chair. "So I'm a matchmaker," he said scowling. "Mitch, I don't like to see what's happening to you. You spend more time under the wire than out of it. It isn't healthy, it isn't good for you."

Mitchell grinned and held out a hand. "Indian rassle?"

Price flushed. "All right, all right, I know you work out at the gym every week—you're in good shape physically. That's not what I'm talking about, and you know it."

Mitchell took a long pull at his can of beer. It was lighter and maltier than he liked, but it was cold, at least, and felt good going down his throat. What about a green beer for St. Paddy's day? Give it a touch of mint —just a suggestion. . .

"Say something," Price said.

Mitchell's eyes focused on him slowly. "Hm-m-m. Think Diedrich will stop being a nuisance now?"

Price made a sour face. "O.K., change the subject. Sure, I think Diedrich will stop being a nuisance. We're sending him a complete rig—couch, control board, library of crystals. And he'll take it. He's hooked."

"Dirty trick?" Mitchell suggested.

"No, I don't think so."

"You planted that picture of the three crosses, didn't you? Then, just to make sure, you stepped up and read him a paragraph from the crucifixion scene in Matthew. Pretty foxy."

"Luke," said Price. "Yeah, pretty foxy."

"Tell me something," Mitchell said. "Just for curiosity —how long since you've been under the wire yourself?"

Price looked at his hands, clasped around the pipe bowl. "Four years," he said.

"How come?"

"Don't like what it does to me." He folded his free hand around the one that held the pipe; his knuckles cracked, one after another.

"Made you twenty million," Mitchell said gently.

"You know I don't mean that." Price unclenched his hands, leaned forward. "Listen, the Pentagon turned down that contract for forty thousand training crystals. They decided they don't like what it does to people, either."

"Keeps them from being eager little beavers," Mitchell said. "My back aches for the Pentagon."

"What about the contract—does your back ache for that?"

"You know, James, I don't understand you," Mitchell said. "One minute you're telling me the mentigraph is worse than hashish, heroin, booze and adultery, all put together. The next, you're complaining because we don't sell more of 'em. How do you explain that?"

Price did not smile. "Let's say I'm a worry-wart. You know I keep talking about pulling out—maybe I'll do it some day—but till I do, I'm responsible to the corporation and I'll do my best for it. That's business. When I worry about you, it's friendship."

"I know it, old buddy."

"Maybe I worry about the whole world once in a while, too," Price said. "What's going to happen when everybody's got a private dream-world? Where's the old Colonial spirit then?"

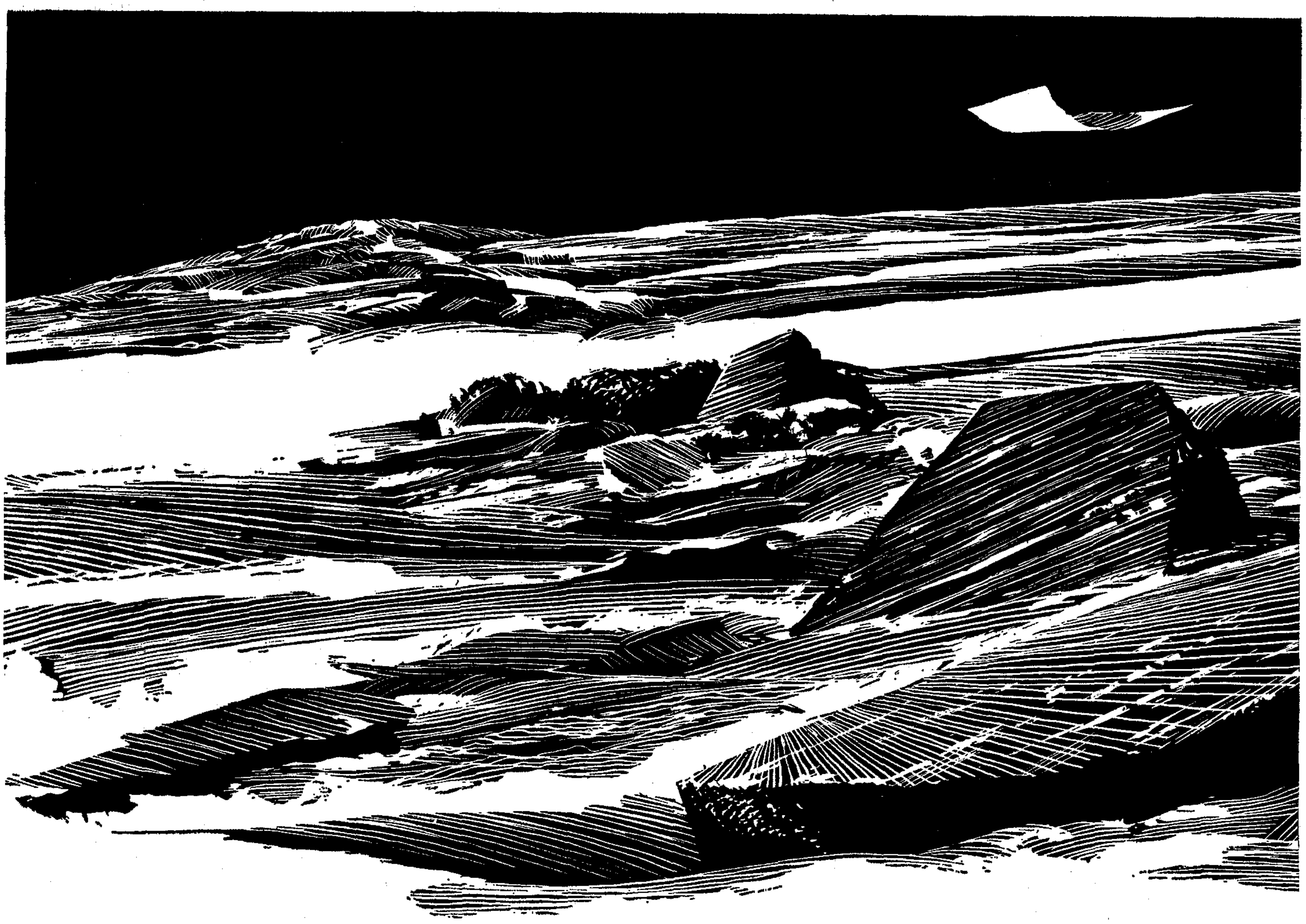
Mitchell snorted. "Have you ever done any reading about Colonial times? I did some research on it years ago. They used to drink a horrible thing called flip, made out of rum and hard cider, and they'd plunge a hot poker into it to make it froth up. You could tell the drunkards just by seeing who had an apple orchard."

Price swung his legs off the relaxer, put his elbows on his knees. "All right, what about this? You've got it made, haven't you—you can spend half your time in a world where everything is just the way you like it. You don't need that sweet kid that walked out of here half an hour ago—you've got twenty better-looking than her. So why get married, why raise a family? Just tell me this—what's going to happen to the world if the brightest guys in it drop out of the baby-making business? What happens to the next generation."

"I can answer that one, too."

"Well?"

Mitchell lifted his beer can in salute, staring at Price over the shiny top. "The hell with them," he said. ■



PHILIP R. GEFFE

INTER-DISCIPLINARY CONFERENCE

Just because you have all the relevant knowledge required at a conference . . . doesn't prove a thing!

Illustrated by John Schoenherr

Extract from the *Proceedings of the Nippon Biological Society* (in Japanese)

Title: "The Dawn-Papyrus of Siberia: a New Extinct Species"

Author: Prof. Ito Hashimoto, Ph.D, Kyoto University

". . . This interesting species, found near the Siberian town of Cham-Toru, has evidently been extinct for about 80,000 years—probably because of unsuitable climatic conditions subsequent to the second glaciation of this area.

"While quite similar in many respects to the well-known Egyptian Papyrus plant, it is clearly a different species. The leaf veining structure is opposite, rather than alternate, but the most remarkable difference lies in the chemistry of the plant's resin system. This was observed in a sample of papyrus paper which was accidently formed by natural processes. This paper, although not made by man, was nevertheless of superlative quality, and has evidently survived over 900 centuries of weather without apparent damage. Chemical tests have shown that this was due to the polymerization of Dawn-Papyrus resins in the sample.

"This naturally formed paper was, of course, not bleached as manufactured paper is, and was characterized by extensive blotches and discolorations, some of which bore a striking similarity to writing in some sort of cursive alphabet, such as English or Arabic script. Indeed, some members of the expedition believed, at first, that we had discovered samples of writing in an unknown language. Later we found that radiological dating fixes the age of the specimen at from 90,000 to 110,000 years, so this hypothesis has been abandoned.

"The polymerized resin shows a macroscopic structure akin to crystallization, which results in the appearance of a sort of snowflake design when held up to the light, more or less like watermarks in ordinary paper."

* * * * * *

Extract from the *Oxford Journal of Asiatic Antiquities* (in English)

Title: "Additional Notes on the Excavations at Qumshakru, Near the Ancient Site of Babylon"

Author: Prof. Sir George Cranston, F.R.S., M.A., University of Birmingham

"While a full report on the principal finds of the excavations has been given elsewhere, it is considered worthwhile to report on some miscellaneous items found there which are not without interest.

"Considerable excitement was aroused, and maintained for a few days, when about 300 sheets of papyrus manuscript were uncovered. The point of interest lay, not so much in the material used—since it is known that a desultory traffic had been maintained between Egypt and Babylon for some hundreds of years—but in the markings on the paper: a cursive script which somewhat resembled English or Urdu writing—although, of course, not at all the same. One of these sheets exhibited some art work which rather resembled a map of Eurasia, except that it showed Siberia and Alaska connected by a bridge of land. This, of course, has not been the case for many tens of thousands of years, and, in any event, was not known to the ancients at all.

"The design on this sheet also showed a seven-pointed star on that portion of the drawing which—had it been an actual map—would be near the present site of the Siberian town of Cham-toru.

"The most notable feature of the Papyrus scripts lay in the water-marking of the paper. From the known period of the pottery and other artifacts found with the paper, the items have been dated at around 1200 B.C. This establishes the find as being certainly the earliest example of water-marked paper known, and precedes the first previously known case of water-marking by about twenty-two centuries. The technique used was a very remarkable one, and has been the subject of much speculation among members of the expedition. When a sample is held up to the light, one can see an exquisite snowflake design, which compares in quality with the best water-marking of modern times. Apparently the artist was content with the one design, for—although all 300 sheets were carefully examined—no variation in this design was found.

"The presence of the scriptlike markings was attributed to the 'doodling' of an Egyptian scribe, and the paper was evidently used to wrap valuables which were shipped on the long journey from the Nile to Babylon. Only one sheet of paper was found without these annoying marks. This single unspoiled sample has been sent to the British Museum as the earliest known example of water-marked paper."

* * * * * *

Extract from the *Transactions on Information Theory* (in English)

Title: Applications of the Stochastic-Staircase Function in Domains of Piece-Wise Orthogonality

Author: William Peterson, Ph.D, Research Associate, University of Buckeye

"*Abstract.* It is shown that, if the Lebesgue-Stieltjes integral of this function vanishes on the sequence-contour, then the symbol sequence has all the essential characteristics of human language, being sharply differentiated from noise. Applied to practical problems—say, to the analysis of an unknown written language—the language character of the sample would be established with a probability of 0.99 if only the sample contained 64 characters, out of a 32-character alphabet. Since the branch points and substantives are clearly indicated, it appears likely that such a sample could be deciphered readily even if no Rosetta-stone-like clues were available. Application to military codes and ciphers is under development, but, of course, the much higher modulus of such sequences would require very much longer samples for analysis."

* * * * * *

Extract from the *Soviet Journal of Siberian Geology* (in Russian)

Title: "A Survey of Glacial Drift in Siberia Since the Beginning of the Tertiary Period."

Author: Prof. A. Leminov, Moscow Technical Institute

"An unusual dispersion of decayed granite was noted which was scattered over a very long north-south track. This extended from the Siberian town of Cham-toru, near the Arctic Circle, to points almost as far south as Samarkand.

"The similarity between the thousands of samples observed suggests that they all came from the same source; and, therefore, that their geographic distribution is attributable to glacial drift. Altogether, this area has been subjected to five distinct glaciations. Of these, the second —which began about 100,000 B.C.—was not only the longest in point of duration, but it was the only one to extend as far south as the samples observed just 200 miles north of Samarkand. Between this point and the southern terminus shared, approximately, by the other four glaciations, the incidence of similar paleoliths is only about one-fourth of that observed to the north.

"The apparent conclusion is that the source of these fragments was systematically broken down by four successive glaciations. Each one increased the total drift by glacial work done on the granite source. The drift did not increase in the southernmost area, because only one glaciation—the second—had penetrated so far. The fact that the first glaciation made no contribution to this unique dispersion can be explained by assuming that the source consisted of an outcropping of granite which was originally protected by a thick bed of other material, which the first glaciation carried off.

"The conclusion that the second glaciation was involved is reinforced by the fact that the southern samples are, on the average, of larger size, and show a greater degree of superficial weathering. This last is explained by the fact that the samples were not protected from the eroding effects of the weather by a casing of ice during subsequent glaciations, as were the northern samples; their larger size is attributed to the fact that work was done on them by only one glacier, and so they suffered only one cycle of fragmentation.

"The largest pieces found in the north, on the other hand, exhibit heavy parallel score marks with greater frequency than the largest southern specimens, indicating, again, that they were forced across the land more often than the southern paleoliths. In some cases, four distinct sets of score marks were observed on the same piece, but no samples were found with five sets, and no southern samples with more than one. This independently confirms our conclusion that none of the drift is due to the first glaciation.

"The most curious feature of these fragments is the strong suggestion, in their appearance, of having been worked by human hands to produce smooth, flat surfaces meeting at right-angle corners, as in common building stone. But, because the fractured surfaces show, if anything, somewhat less erosion and decay than the smooth, this would imply that the stone pieces had been worked by stone masons *before* the second glaciation—an absurdity.

"At present, no natural process is known to the author which will produce this appearance in granite—or decayed granite. If any colleagues have made similar finds in the glaciated portions of Europe or North America, the author would appreciate hearing about them."

* * * * * *

Extract of Tape Recording, Conference Room B, Physical Science Building, Buckeye University

"Gentlemen, as you know, I am Bill Peterson, an electrical engineer specializing in information theory. This meeting has been called at the request of Prof. Fielding. After our discussion is over, I will use the tape recording as the basis of my report to Prof. Fielding. Will you gentlemen please identify yourselves for the record? Why don't we start with you, Alex?"

"Prof. Alexei Leminov, Soviet exchange teacher of Geology, interested in glaciers and the ice ages generally. Tell me, Bill, is it common in American universities for English teachers to call meetings of scientists together?"

(laughter)

Peterson: "Uh . . . Well, you see, Alex, Prof. Fielding is Dean of the Humanities here, and he has a sort of bug about inter-disciplinary conferences among scientists. He likes to talk about cross-fertilization . . ."

Voice: "Keep it clean, Bill."

(laughter)

Peterson: "Hah, yes, let's. Anyway, you don't have to take it *too* seriously. Just talk enough so I'll have something for my report. You're next, Ito."

"Ito Hashimoto, Assistant Professor of Plant Ecology, University of Kyoto, Japan. I'm just here on a sabbatical visit. Paying my own expenses, as a matter of fact."

Leminov: "Ever cross-fertilize a glacier, Ito?"

(laughter)

Hashimoto: "If I knew how to do that, I'd try it on a Russian diplomat."

(loud laughter)

Voice (barely heard through continued laughter): "Every one to his own taste, but I'd prefer a chorus girl."

(laughter continues)

Peterson: "All right, fellows, let's get back to the agenda. We want to finish before lunch."

"George Cranston here, Prof. of Archaeology, University of Birmingham. I say, you don't suppose that *we* are in any danger from Ito, do you?"

(laughter)

Leminov: "Are you sure we have enough disciplines represented here for a true inter-disciplinary conference? Perhaps we ought to have a professor of Theology. You do have them in this country, don't you?"

* * *

Peterson (45 minutes later): "Come on, now, you guys. I have to write *something* for Prof. Fielding. Has anyone got any ideas?"

Hashimoto: "I understand that Prof. Fielding is fond of science fiction . . ."

(laughter)

Cranston: "Tell him we invented an information-theory bomb by cross-fertilizing ancient Babylonian glaciers."

Leminov: "My government doesn't approve of information-theory bombs. Anyway, we invented it first."

(prolonged laughter)

Peterson: "It's hell to be born a straight man."

(laughter)

* * *

Extract from report to Prof. J. Fielding, Dean of the Humanities, Buckeye University

Title: Report on the First Annual Inter-Disciplinary Conference, August, 1963

Author: William Peterson, Ph.D.

"In conclusion, I would like to say that everyone present was greatly stimulated by the different points of view, and the fresh attitudes brought out in the discussion. All of the foreign visitors remarked that they would take the idea of cross-fertilization, through inter-disciplinary conferences, back with them when they have concluded their stay at the University." ■

CITY OF
D.P.W.
NOBODY RO
UND

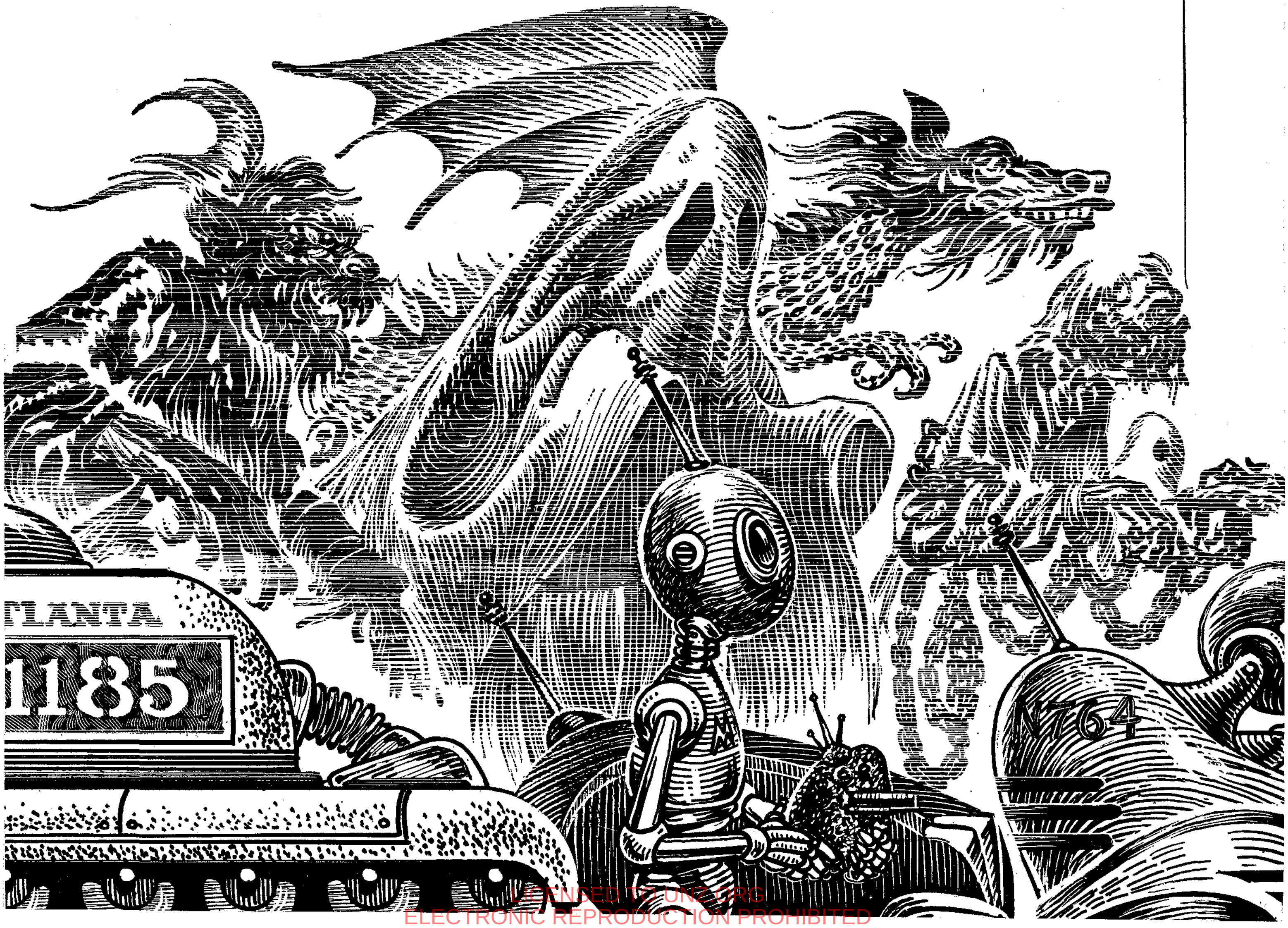
sleeping planet

Part II of III.

That a machine can multiply a single man's strength
thousands—even millions—of times has long been known.
But the Llraran were only beginning to find what
strange multiplication an angry,
skillful, and deadly lawyer could achieve...
It was grim and ghostly!

WILLIAM R. BURKETT, JR.

ILLUSTRATED BY KELLY FREAS



SYNOPSIS

With the stellar war between the sprawling Llralan Empire and the much smaller but better-equipped Terran Federation threatening to stretch on indefinitely, the Llralan Supreme Council decides to gamble a battle fleet on a farfetched and improbable plan of attack formulated by an obscure general officer, Martak Sarno, provincial governor of Risstair. His plan hinges on an unique and unprecedented toxic weapon discovered quite by accident, and calls for a daring strike into the very heart of the Federation—the Terran home system.

As the attack comes off—as Terran defenses gird for the onslaught, as citizens scatter for cover—the previously and clandestinely delivered toxin does its work, and nearly all of the three billion some-odd inhabitants of Terra, Venus and Mars collapse more or less simultaneously into a prolonged "sleep". Sarno's paratroops occupy the planets, his warships land, and orderly Conquest Duty gets under way, and the invasion is termed a howling success.

Of the nine captured Terrans unaffected by Sarno's "Dust," Bradford Donovan, a London truck driver, has earned himself the dubious honor of incurring their special displeasure for having sold his freedom dearly. The tenth—and so far uncaptured—unaffected, one James Rierson, Atlanta criminal attorney, his annual deer-hunting trip interrupted by the invasion, has destroyed a scout-flivver in Georgia and has since been hounded relentlessly, gradually being forced into a skillful mantrap.

Meanwhile, a chance remark by one of his captors has set the wheels going round in Donovan's cranium and he has decided to take the initiative, chivvying them before they can start in on him. Unknown to him at this time, Rierson's irritating refusal to be captured or shot takes on a new significance in light of his, Donovan's, attempt to instill the fear of "Gremper" in his peasant watchdogs, and his fairy tales have gained the attention of no less a person than Sarno himself—an old and personal enemy from a past he had thought dead and gone. His first intimation of Sarno's identity comes when he is informed that he is to be transferred to the fleet-leader's flagship. It comes as a terrible jolt.

While still dazed by this revelation he is hustled aboard an airship along with another Terran prisoner, Donald Shey. Shey seems bent on getting his head caved in by some thoroughly-incensed guard. En route across the Atlantic, Shey begins to ask pointed questions concerning Donovan's motives for telling his fairy tales, indicating a desire to get in on the fun.

Suspicions aroused by the other's persistence and rapid-fire cross-examination as compared to his seemingly pathetic desire to gain a hold over his captors, Donovan belatedly realizes that he has had a mocker planted on him. This realization is confirmed moments later when Shey is addressed by the title of Security Chief and shown deference to as a radio message arrives ordering the ship to change course and proceed to Georgia, where Colonel Vargir Zowal's troops have at last cornered the "Spook of Baxter" (Rierson). The mocker—Security Chief Drelig Sjilla—is to witness the capture firsthand.

James Rierson, trying desperately to elude the closing trap, his airship crippled and forced down in Baxter Township, roadblocks barring his escape by car and every exit sealed by troops, finally has been cornered in a furniture store, Zowal, using a loud-speaker, has attempted to talk him into surrendering by emphasizing his helplessness in the face of overwhelming odds and predicting the imminent downfall of the entire Federation, and has failed. Rierson wants no part of a Llralan-run existence.

Bradford Donovan is removed from the flivver and backed against a wall while it takes on troopers and goes aloft to participate in the attack. He considers making a break for it, but discards the idea with the sure knowledge that he would be burned down forthwith and that the attack would roll on, unimpeded. If he is to live to fight another day, he will have to stand still on this one and watch the hopeless last stand of a fellow Terran.

The Spook of Baxter will have to go this one alone.

PART 2

XI

The flivver made a fourth run past the windows and Rierson flattened behind his protection. Searfire splashed all around, and the smell of scorched plastic came to his nostrils. Already they were pecking away at his couches and easy-chairs. It occurred to him that the big pile of furniture in the middle of the floor was a dead giveaway, that it would naturally draw fire—and that he could be pinned down by that fire while troopers maneuvered into a position to blast him. Cursing his carelessness, he scanned the showroom for a better location.

His gaze fell on the door leading to the roof. From there he could watch the windows while being well back from them; and any soldiers entering the intervening space would be walking right into his sights providing the drifting smoke didn't hide them.

He vacated his improvised fort, moved to the door and looked up the first flight of stairs to the landing. If forced back from the door he could retreat upward, holding them at bay with the seargun. Then—But his mind refused to dwell on what happened then. Going back into the showroom he grabbed a long couch, muscled it into place across the doorway, climbed over and dropped to his knees on the other side. At one side of the door he left a gap between the jamb and couch, barely wide enough for a gun barrel. There he settled down to await further developments.

Developments came in the returning throb of the big flivver's motor, followed by a foundation-shaking series of blasts along the front of the store, up near the ceiling. Long, straggling cracks appeared in the plaster; dust and chips rained into the smoky interior. At several points the wall bulged inward as if clobbered from without by an angry giant.

As the flivver went over, white flame blossomed at the middle window and Rierson ducked. The concussion accompanying the flash was sharp, intense—a blast-cannon in operation. Force-driven chunks of wood, plaster and steel thudded into the walls, the couch, the stairs behind him. As he hugged the floor, three more blasts followed in quick succession. The rattle and thud of falling and flying debris became almost continuous. When the patter abated, the flivver came in again and this time blue flame jetted through the wall and ceiling at several points, scoring the floor deeply. When it climbed away, a large hole was allowing sunlight into the murky room. The greedy crackle of flames came to him and the volume of smoke increased, leaking out through smashed windows and newly-opened exits.

It lasted like that for long-drawn minutes. The diving ship, then the hammering cannon, then repeat. Rierson kept low, not risking an eye to watch the systematic destruction taking place. No soldier would try to cross that flaming hell while the guns were going—not unless he was tired of living.

Then the guns stopped, leaving only the rumble of falling debris. His guts tightened, and he was vaguely surprised that he could become any more scared than he had been since realization of his fate was first thrust upon him.

Here it comes.

He shifted position, peered out through the gap.

Smoke roiled in great billows, allowing only glimpses of the far wall—but those glimpses were enough to see that the left and center window were now one, joined by a great, uneven gap, and that the wallspace between the center and right windows resembled Swiss cheese. Multicolored flames leaped and danced as various off-planet woods caught fire and non-burning synthetics began to smolder odoriferously. The carpet itself was ablaze. Most of the smoke was going out into the street, but stray streamers began to drift over. His eyes smarted.

An indistinct figure loomed in the smog, clutching rifle at ready. He was stalking the piled furniture Rierson had vacated. Drawing the searpistol, Rierson sighted through the gap, touched the firing button. A wide streak of blue slashed electrically through the murk, caught the sneaking Larry in the small of the back. He dropped his rifle, clamped hands to the wound, stumbled forward into the furniture fort. He fell into it face first, bounced and slid loosely to the floor.

A muffled inquiry sounded from across the room near the ruined outer wall. Rierson's using the seargun had confused them; they weren't sure whether he had fired or been fired at. He shifted the weapon's muzzle toward the voice, hissed "Over here," in Llralan.

"Virr?"

Now he had it—the exact location of the inquired. He pressed the gun-handle, waved it in a vicious arc about waist-high. Came a gurgling shriek, a heavy thump.

"Eyiii!"

He nearly dropped the pistol at the suddenness and nearness of that shrill, vengeful cry. The space before him was abruptly alive with Llralans—all rushing straight at the abandoned couch-fort. There was no time to pick targets; he twisted the beam selector to "spray" and held down the button.

A wave of energy swept out at the attackers from their flank and washed among them, charring everything it touched. As living flesh became ash, cries rose from tortured throats, choked off as life fled. He fired until nothing moved before him, then released the button and gingerly tuned the gun back to narrow beam. Was it his imagination, or had that torrent of death faltered as it reached for the last two? Was the gun running dry so soon?

He surveyed the damage wrought. Discernible through the smoke at floor level were seven bodies including the one near the furniture-fort. Adding to that the one he had killed by ear it made a total of eight, plus five others this morning and three plus a blasted flivver several days ago. Not a bad exchange for one man—and the price would go up every time they rushed him.

Silence descended. The odor of sear charges, smoldering plastics and burned flesh was nauseatingly strong. He tried breathing through his mouth, coughed, realized the smoke was thicker.

A tongue of searfire reached into the haze, created ruin along the far side of the room, then lashed blindly about like an out-of-control firehose. The destruction continued until the flame flickered, paled, died. Immediately a second gun took up the barrage. A heavy lounge chair lurched drunkenly, teetered and fell on its side as its legs were burned from under it. Twice one of the Llralan corpses jerked as searfire bit into it. One body's pants were afire, burning steadily. The stink of charring flesh waxed stronger.

The second hose of energy flickered into oblivion and a third replaced it, sketching out a rough half-circle, but falling feet short of the doorway. Before it faded, a fourth joined it, and then a fifth. When number three died, four and five were joined by a sixth and seventh. This continued until everything within that rough half-circle was blackened. Several of the smaller fires burned out as they exhausted, or had exhausted for them, their fuel supply.

When the fusillade stopped, the soldiers came again. Shimmering in the thick atmosphere like figures on a faulty tri-vid receiver, they drifted into the charred area. Rierson raised the seargun, waited. When the first soldier leaped up on the blackened furniture-fort with a triumphant whoop and burst of energy down toward where he should have been, James Rierson fired.

The weakening flame-jet caught him high in the trunk and he toppled into the space he had thought to contain his prey. But he wasn't dead; he started screaming hideously, begging for someone to stop the pain. Rierson shuddered, dropped the seargun distastefully and drew the machine pistol. The others were turning toward him, squinting through the smog. He thumbed the safety, began to squeeze off individual, aimed shots. It was point-blank range and they were silhouetted against the lighter gray of sun-diffused smoke. While they tried to find him, three soldiers died without a grunt; a fourth went to his knees, was trying to raise his gun when a fifth bullet rolled him sideways.

The seared soldier was still screaming.

It seemed to rattle his fellows. For a precious instant they stood unmoving, guns silent. A fifth and sixth of their number fell before they broke and ran. Rierson, taken off-guard by their flight, let them go unscathed.

"Somebody!" raved the dying Llralan. "For the sake of Sirri, *somebody* . . . oh, Sirri, it hurts! Hurts—"

Something deep within the Terran cringed. Before he quite knew what he was doing, he was over the couch and striding toward the screams. When he put his weight on a gutted chair, its charred legs splintered and some of the furniture shifted. He pushed on, stood looking down at the writhing, horribly-burned body.

The Llralan had either heard the furniture shift, or now sensed his presence. The scorched head twisted, and eyes glinted whitely in a blackened mask. He stared up without seeing.

"Zieg?" he queried. "Is that you . . . Zieg?"

"Nyo," said Rierson. "Your comrades are gone."

"Rekk?" The voice was incredulous. "Are you . . . the Rekk?"

"Yes."

"You . . . shot me?"

"Yes."

"Ahh . . ." He seemed to relax. "I was afraid . . . that I had been shot by somebody . . . else in the confusion. At least I am to die honorably . . . in combat." The glazing eyes swiveled about, trying to find his face in the smoke. He started visibly. "Sirri! You look like nightmares of . . . childhood, Rekk—like *naparra*—like a . . . walker of the night." He expelled breath rattlingly. "Then the . . . ancestor-worshiper was . . . right. You are . . . are—" A convulsion racked him. "Rekk?"

"What?"

"Rekk, let me join *my* ancestors. I am weary . . . and the pain is unbearable. Give me surcease." Orange blood dribbled over his burned lips. "I came at you openly—I fought fairly. I do not deserve . . . a slow death."

"But—"

"You began killing me, Rekk. Finish the job. Or must I . . . beg? Is this torture the price I pay for . . . invading and disturbing . . . your rest? What is death? You should know better than I. But the pain, the pain—" The voice became incoherent, the eyes rolled wildly.

Rierson raised the pistol and gave him surcease.

Shaken, his hands trembling and legs stumbling, he headed mechanically back for the doorway. The smoke was thinning, being sucked through the doorway and up, and a draft was blowing against his neck, but this development went unnoticed by his numbed brain. He mechanically climbed over the couch and staggered as he hit floor.

Something intolerably hot snapped past his head, whacked the door.

He dropped to his belly, peered upward through the eddying smoke. On the stairs a tall, broad-shouldered Larry with a comet on his breast and a pistol in his right hand was trying to penetrate the smoke with narrow gaze. Rierson in his mind's eye saw the ruined, pain-contorted features of the Larry in the showroom, felt his whole being rebel against becoming a like specimen. The machine pistol came up swiftly, surely, spat twice.

The Llralan stood as one frozen for long moments, staring unbelievingly at the holes punched in his tunic. Then he seemed to collapse upon himself and slid loosely down the stairs. Rierson rolled to one side, retrieved his rifle where it leaned against the wall and scrambled under the stairs just as heavy boots pounded on them. Seen from this angle, the smoke was a thick snake coiling out of the door and up toward the opened door on the roof.

Figures waded out of the smoke, and searfire crackled down from above. Quick retaliation was given, and for a short, deadly second the two forces poured fire into each other. Then somebody realized what was going on and bawled for a cease-fire. The two bodies adorned the barricading couch; two more had fallen out of sight into the showroom. A fifth had tumbled from above onto the comet-wearer. Some dozen soldiers milled about confusedly not ten feet from where their quarry crouched.

"Inside!" shouted the leather-lunged one. "He's trying to sneak away in the smoke. *After* him!"

The soldiers ducked back into the pluming smoke. The officious one made to follow, hesitated, dived behind the couch. From within came a burst of shots, an anguished cry, then incensed bellows. The Llralan at the couch waited until the shooting had stopped and the bellowing attained volume before he betook himself inside, shouting authoritatively.

As he disappeared, Rierson rounded the corner, hurdled the piled bodies and sprinted up the stairs. Halfway up, he passed a second wearer of the comet, unconscious and missing an arm below the elbow. The other hand gripped a still-smoking pistol.

The stairs went up through a small rooftop shed from where the parking attendant usually presided over customer air traffic. He paused within the door, scanned the roof.

A flivver was parked on the gravel, occupied by a sole Llralan in the bubble cockpit, talking excitedly into a shortwave. To get to the next roof, he had to pass the flivver, pass under the gaze of the Llralan and risk having the hunt called after him by the shortwave.

He went across the roof like a quick-moving cat, up the short ladder into the craft's interior and paused to listen and let his eyes become accustomed to the dimness. He could hear the Llralan's voice now, but he was talking so rapidly his speech was incomprehensible.

Rierson eased to the cockpit ladder, warily mounted it. When he got head and shoulders above the hatch, he rested his rifle across the padded arm of the nearest bucket seat.

"Larry."

The trooper started violently, half-turning in his chair and dropping his mike. When he saw the rifle and who was behind it, his face quickly achieved the color of faded orangish-yellow parchment. His throat worked convulsively, but he couldn't force any words out.

"Larry, you're dead. All that remains is for you to go through the formality of dying. Understand?"

The trooper's eyes showed that he understood perfectly.

"But—" Rierson continued, choosing his words carefully, "there is one chance for you to see another sunset. Interested?"

The Llralan nodded jerkily.

"Can you fly this ship?"

"I can, Gremper. As radioman, I must be prepared to fly it if the pilots are—"

"I don't want military procedure. I want co-operation. *Full* co-operation. That's the only way you see the next sunset. Understand?"

"What would you have of me, Gremper?"

"Take this ship north below radar horizon, and follow directions explicitly. And if you get any humorous ideas, remember: they'll sacrifice you to get me. So stay on the deck and stay alive."

"But"—the Llralan frowned in perplexity—"how is it that you fear death? Can the dead be killed again? If you are Gremper, then death can hold no fear for you. If you are not—" His eyes narrowed and his hand began to stray toward his holstered pistol.

The radio sounded, voicing a sharp inquiry.

"Answer them," Rierson told him. "And make it good."

The Llralan hesitated, then picked up the mike. "This is Livar."

"What's happened up there, Livar?"

"I . . ." Livar looked helplessly at the rifle's muzzle, then at its wielder.

"Tell him," hissed Rierson, mind working in high gear, "that you are Gremper's captive."

Livar shuddered, made as if to faint. Rierson made a mental note to inquire further into this matter of *Gremper* as soon as possible. Whatever there was about that name which struck such fear into a Larry's heart was worth knowing.

"Tell him," he repeated.

Livar told him.

"*What?* Listen, Livar—if you've been on the '*sos* again, so help me I'll have you shot . . ."

Rierson climbed into the cockpit, swapped rifle for hunting knife and held it across Livar's throat while he disarmed him, then took the mike.

"Livar is not drunk," he said in his most sepulchral voice. "He is speaking the cold truth."

The radio lapsed into shocked silence. Rierson exerted pressure on the knife. "Now, Livar—it's time to go elsewhere. And remember about the radar."

"I will . . . but why should you care about that?" The Larry was persistent; Rierson had to give him that.

"*I* cannot be killed," he admitted modestly, "—but *you* can. And you are going to render me a service. Surely you expected some consideration for that."

The radioman's eyes went round. "I hadn't thought of it that way."

Rierson permitted himself a long-suffering sigh. "Mortals never do. It's left up to us ghosts and goblins to see the overall picture. Ah, well—" He prodded with the knife. "Home, James."

"What?"

"Let's go."

"North?"

"North."

The ship soared, streaked away from the menace of the guns below, leaving Baxter behind in a swirl of exhaust vapors. Livar got down just above the treetops and let it surge forward. The ground became a kaleidoscopic blur.

"We've got all day," said Rierson, dropping into the seat behind him. "Take it easy."

Obediently, the ship slowed to a more sedate pace and Rierson leaned back, holding the seargun on his captured chauffeur. Muscles and nerves keyed for ultimate effort began to twang tautly, trying to relax. His stomach was unsettled; a foul taste rose in his throat. But in spite of that, he knew a fierce exultation.

He had shot his way into and out of a virtually escape-proof trap, had taken a heavy toll among his pursuers, and caused confusion, destruction, *fear*. He had given the massed might of the Empire pause—perhaps had gained a particle of time with his antics—time for the Federation brass to get something rolling to break the Llralan deathtrap on Earth. He had kept platoons, ships, radio hookups tied down—men and equipment intended to help consolidate Larry's position. And now the search would be after him in full cry—consuming more time, man-hours and materiel.

All he had to do was stay one jump ahead of reprisals and continue to strike back hard enough and frequently enough to keep them preoccupied.

All he had to do was keep a Larry invasion fleet off-balance single-handed.

Under his watchful gaze, Livar kept the ship on course north and behaved nicely. He didn't try to veer off; he didn't try signaling for help; he didn't try leaving his carrier-wave on to attract attention. All in all, he was a very good little Larry.

And a very, very frightened one.

Frightened of someone or some*thing* named Gremper. Rierson puzzled that one over while the ship fled north.

XII

The calendar on the wall was of an unique composition; like all the others aboard the *Risstaixil* it recorded the day, month and year by Llralan, Terran and Risstairan reckoning, simultaneously and side by side. According to it, a full Terran week had elapsed since Landing Day.

Drelig Sjilla, Imperial Intelligence, rank of Security Chief, presently attached to the elite Corps of Mockers, rested his weary frame against a bulkhead while Martak Sarno's voice filled the broadcast room, speaking the toneless English of a mechanical translation.

"Peoples of the Federation, I am Martak Sarno, Supreme Commander of the forces now occupying the home system of your species, and this is your seventh day's report on conditions here . . ."

"The general wanted you to see this," Blanatta said, turning down the volume of the monitor they were watching. On the screen, Sarno was sitting behind a massive wooden desk cluttered with papers; behind him on the wall hung the Great Seal of the Supreme Council above crossed flags of Empire—fields of space black with a spray of stars depicting the Milky Way and a superimposed judicial gavel, symbol of rule. "How do you like that stage dressing, eh?"

"Impressive," Sjilla paid tribute.

"I thought so," Blanatta beamed. "I designed it. Felt it would impress the Rekks more fully, since their own high officials often speak in similar surroundings."

"But what's the point?"

"Listen." The pudgy vice commander—who looked, Sjilla thought, more like a *walsos* brewer than the second-in-command of an invasion fleet—turned the volume up again.

". . . As I have noted on previous reports," Sarno was saying, "the capture of the three planets of Terra, Venus and Mars was brought about by the use of a newly-developed biological weapon known simply as the Dust. Periodic seedings of this Dust into the atmosphere of the three worlds over the past months, under the guise of nuisance raids by our robotic fleets, was the method by which the downfall was accomplished. The effect of the Dust upon Terran animal life is unique in stellar annals: it causes a slowing of the bodily functions, a precipitation of the organism into a kind of hibernation.

"The Dust has been totally effective upon the three billion some-odd inhabitants of this system, as well as a considerable portion of the lower forms of life . . ."

"I see he hasn't seen fit to mention the nine Unaffecteds," Sjilla commented dryly.

"What purpose would that serve?" Blanatta countered. "It might give rise to some irrational hope that our position is not as firm as we claim it to be—and false conclusions lead to rash actions, more likely than not."

"Of course." Sjilla lapsed into silence. In the darkened broadcast room a score of technicians watched monitors, fiddled with earphones and worked the giant transmitters that were beaming the 'cast starward.

"The collapse of the Dusted billions was timed to coincide with the arrival of my invasion fleet," Sarno went on. "The raid-alarms on three planets sent them scurrying for their bomb shelters—wherein they succumbed more or less simultaneously as the Dust did its work.

"Across these three worlds, in thousands of bomb shelters, the populace of this system is sleeping. It will be a long sleep—the effects will not wear off for some five months—but it will not be a fatal one. At the end of five months they will awaken with nothing to show for their slumber but a slight headache, a fit of sneezing"—here the general's somber features split into a grin, instantly suppressed, which was all part of the theatrics—"and a big thirst. They will have no sense of time elapsed at all.

"Or, if things proceed satisfactorily—and I believe they will—we can make use of our Antidote and awaken them at any time. The headache and sneezing will be the same, but the thirst won't be quite so bad. Which is something to consider if you don't want all your lakes and rivers drank dry at the same time." The calculated lightness again.

"Peoples of the Federation, let me make one thing explicitly clear: *the fate of these people rests solely with you.* Their lives have been merely suspended—not taken. The rest is up to you.

"Within a very short time now, a Federation warship carrying a delegation of Congressional and military leaders will arrive on Terra. These men will survey the planets and determine the strength of my position here. Let me tell you what they will find. They will find the cities empty, the towns deserted, the farms left untended. They will find three billion Terrans asleep in bomb shelters across the face of the planets, exactly as I have said they would—*and they will find Imperial soldiers occupying those some bomb shelters.* Each bomb shelter has its detachment of troopers, prepared to carry out any order it may become necessary to give. That order *could* be summary execution of all hostages of war. I hope that will not be necessary.

"The Federation Congress has asked to negotiate this matter under a temporary cease-fire agreement. The Supreme Council of the Empire of Four Thousand Suns has agreed to this. Negotiations will commence after the delegation has made its findings here known to the peoples of Federation—to you.

"To the bargaining counter I shall bring the lives of three billions of your compatriots. It is up to you to decide. These billions are not dead—far from it. They are sleeping.

"Only *you* can decide if they will awaken from that sleep with aching heads to sneeze violently and drink deeply—or if they shall awaken at all."

Sarno hunched heavy shoulders forward, gazed into the screen as if he could see those watching from the other side. His whole speech had been calm, authoritative. Now his voice was flat, implacable.

"Within a few days, certain demands will be made of the Federation. They *must be met.* The decisions concerning those demands will govern my actions here.

"Think it over."

Slowly the picture did a fade, leaving the hard, unbending image of Sarno's visage graven on the watcher's consciousness. Blanatta heaved a high, shut off the monitor. "What do you think?"

"Very effective," Sjilla responded sincerely. "Not overdone—no transparent propaganda. Just the flat, cold facts." He shivered. Three billion lives resting in the crook of Sarno's finger, hanging on his slightest whisper of command. "Very effective," he repeated.

Blanatta nodded fondly. "He's really worked on this thing—ever since he conceived of a military use for the *xil'tressk.* Plotted every angle down to the finest detail—no wonder the Council could hardly refuse him when he went before them, even with such a farfetched plan as this seemed to be. He had planned so carefully—calculated every possibility so closely . . ."

"Every possibility except that there would be those who were immune," Sjilla injected into that worshipful recital.

"That will make no difference," Blanatta opined blandly, refusing to be shaken in his absolute faith in his idol. "Absolutely none."

"You're right," agreed Sjilla moodily. "It won't. In fact, it's my job to see that it won't—though I've been a week on it now without making much headway.'

"You will," predicted the paunchy vice commander, serenely confident. "My general has faith in you. Which reminds me: he said he wanted to see you after you had witnessed the broadcast. He will be on the bridge. And now, if you will excuse me . . ."

"Certainly." Sjilla waved vaguely in response to the other's salute.

A week gone, he was thinking sadly. *And with it my chances of an early ship home to Llrala. I thought my job was over when the fleet came in—but from the looks of things it's only just begun.*

When he had reported aboard the flagship from the scouter that had brought him over from Mars, he had found the fleet's Intelligence section waiting for him to assume command. Intelligence H. Q., with touching faith in his ability to dodge Terran Security until D-Hour, had assigned him to head them up by remote control, assignment becoming effective the moment he set foot upon the *Risstaixil.*

Sarno had celebrated his safe return from the enemy by dumping the puzzle of the Unaffecteds promptly and with alacrity into his lap. Since then, he had had even less sleep at a stretch than he normally got while operating on an enemy-held world. At times he caught himself remembering those last relatively peaceful days in Rusted Plains with a certain nostalgia. He had been rushing to and fro across this accursed planet overseeing an interrogation here, co-ordinating various of the elements of his command charged with sniffing out planetary bigwigs scheduled for Awakening there—carrying on a conversation with overtones of lunacy while high above the Atlantic Ocean; witnessing the resounding defeat of an Imperial Infantry unit at the hands of a single man, or spook or warlock or whatever . . . he seemed to be the absolutely indispensable man.

Which is a compliment to my abilities, I suppose, he brooded. *But I'd rather have a vacation than a compliment. A bottle of 'sos, a hammock under the trees—a female to ruffle my hair and tell me how wonderful I am . . .*

But no girl would have anything to do with him in the pseudo-human shell Llralan surgeons had given him, he realized—and he wasn't likely to be out of uniform for sometime yet. In spite of three billion helpless hostages as a bargaining point, the Empire was going to have its hands full completing the Federation's downfall. There would be need for mockers.

He shook himself out of his introspection with an effort, left the broadcast room and walked down a short corridor, let himself through a heavy door and so into the ordered bedlam of the *Risstaixil's* bridge. He moved past the big, darkened in-flight computers, walked through the communications section with its constant hum, buzz and mutter as the flagship kept in touch with its brood, and mounted the steel stairs at the far end of the high-vaulted room. This was the final sanctuary of the ship's commander, this raised balcony. And on a flagship it amounted to a kingly throne or a holy kiosk. From here the Supreme Commander furthered the cause of Empire, wielded the power of life and death over ten thousand ships and their crews, and dispensed justice; this was his sanctum inviolate. To be invited upon that raised decking was the naval equivalent of a privvy audience with the Supreme Council.

Sjilla had been invited to the bridge, not the High Walk, but he climbed the stairs as if they belonged to him. Long years of experience had taught him that nothing—absolutely *nothing*—was sacrosanct to those who carried the golden badge of Intelligence.

Sarno was studying the gigantic battle-board—an instrument taking up a full wall of the bridge and studded with innumerable tiny lights in dozens of colors. The lights were never still, shifting constantly in a multicolored maze of pattern within pattern, glowing and dimming, pulsing and fading, each hue and degree of brightness indicative of some facet of the giant complex that was the fleet, each pattern telling a precisely-worded story to those versed in its use. Sjilla moved to stand beside the general, detouring several smaller versions of the main board used for concentrating on a particular area.

Sarno racked a phone he had been speaking into, setting it into place among nearly a score of similar ones, and turned.

"Well, Sjilla! What did you think of my little speech?"

"Very convincing. If I were a Terran, I'd be shaking in my boots."

"You look enough like one to produce a faint quiver right now," observed the general. "Those surgeons did a job of it, didn't they?"

"They did."

"Unfortunately, it wasn't good enough to fool our friend Donovan, eh?"

"They only worked on my skeleton," Sjilla contradicted. "Surgery can only do so much—it can't enable you to outguess the opposition."

"You mean he tripped you up?" Sarno's voice was chiding. "For shame—how did you ever dodge Terran Security if you can't even outthink a legless old man?"

"He tripped me up," Sjilla admitted ruefully. "But he's not all that old, and being legless is no impediment to an agile brain. Mine, unfortunately, was not equal to the contest, as I had been methodically dulling it with endless interrogations, thousands of miles' air time and almost no sleep. He caught me up in my own cover story and made me look like an amateur. Don't underestimate that boy, general—it might be the worst mistake you ever made."

"And what would you suggest I do with that 'boy' as you put it?"

"I could suggest a lot of things—none of them pleasant for Mr. Donovan—but I won't."

"Oh? And why not?"

"Because whatever else he may be, he is still an Unaffected. No matter what kind of nuisance he makes of himself—and he makes a prime one, that I'll concede—he is still one-ninth of a very complicated puzzle the answer to which you want and I have been assigned to discover. If he is dead or in the condition which you or I might wish him in a moment of ire, he cannot answer questions—questions pertinent to the mystery of the Unaffecteds."

"What do we do in the meanwhile then? Let him have his way?"

"Absolutely not! He's done enough damage. Place him securely out of harm's way—put him in the deepest, darkest dungeon this oversized fishcan has got and feed him with a long-handled stick if you have to. *But keep the men away from him.* He's already got half the fleet in jitters with his bedtime stories."

"All right, I'll salt him away good and tight. Now—about this whole problem of the Unaffecteds . . ."

"I was coming to that."

"I'm listening."

"All right . . . in the first place, on the face of it, it is impossible for Unaffecteds to exist. Your Dusting was thorough; my air-samplings prior to D-Hour proved that. Every single living person on these three planets with the exception of myself should have collapsed more or less of one accord within roughly an hour's time—the same hour the fleet came in."

"But nine didn't," Sarno pointed out.

"That's right—nine didn't. Which is impossible."

"But it *happened.*"

"Precisely. It happened. But it couldn't have happened. Not to nine regular, run-of-the-mill Terrans. It *couldn't* have.

"But it did."

"Wrong. Those nine are very extraordinary in one respect. Very extraordinary indeed. In one way, they are as unlike other Terrans as you or I."

Sarno frowned. "In what way?"

"Not a single one of them succumbed to the Dust," said Sjilla simply.

Sarno regarded him incredulously. "Are you trying to be funny?"

"Definitely not," the Security Chief assured him.

"Then why a crack like that? You're deliberately going in circles."

"That's where you're wrong. I am *not* going in circles. I am inching ahead. Would *you* succumb to the Dust if exposed to it?'

"No."

"And neither did I, though I was exposed to it for fully as long as anyone else on these three planets."

"Are you suggesting, by any chance, that Donovan and his confreres are *Llralans?*" Sarno asked softly, in the manner of one humoring a very small child.

"No . . . but I am saying that they have something in common with Llralans, that being their immunity to the Dust. Since they are *not* Llralans, whose immunity is simply a part of their makeup, then the immunity must be acquired—and has nothing to do with the thoroughness of Dusting procedures. And how does a Terran acquire immunity to the vapor of the *xil'tressk* blossom?"

"By being previously exposed to it," said Sarno automatically. And then, "But that would mean . . ."

"Exactly. It would mean that the nine had, at one time or another, been on Risstair, come into contact with the flower, went into the characteristic coma and then gone their way, all unknowingly armored against a unique weapon that would be turned on their planets at some future date."

"Donovan!" Sarno ejaculated. "Rierson—Harris—Nogales!" He ticked them off with mounting excitement. "They were all on Risstair. They all had opportunities . . ." His voice died, and the exultation faded from his features. "Only . . ."

"Only that still leaves five unaccounted for," Sjilla finished his statement for him. "Five mystery cases. And the Spook of Baxter makes six."

"Then you don't think there's anything supernatural about him?"

"I do not. I simply think he's another character like Donovan who happened to have the good luck to be in the wrong place at the right time and miss the brunt of the landing forces. He killed four men. Donovan killed or caused to be killed seven men. Putting Donovan in the Spook's place, you'd have the same situation."

"Except for one thing," Sarno said. "The small fact of yesterday's fiasco. Twenty-eight dead, a half-dozen wounded and an aircraft pirated right out from under our noses. Add to that the rumor that he confessed over the airwaves and for all to hear how he was indeed the fearsome Gremper. . ."

"That's no rumor. I was there. He said it."

"And how do you explain *that*?"

"Easily enough. He identified himelf as *Gremper*, didn't he? Not Grandpa?"

"You were there—I wasn't. Besides, what does that have to do. . ."

"Gremper is a strictly Llralan corruption of the Terran colloquialism *Grandpa*, which means grandfather. The attempt of one uneducated in languages to pronounce an unfamiliar sobriquet."

"So?"

"If the Spook *were* a spook, or some kind of a guerrilla fighter in communication with Donovan by some unheard of method such as, say, mental telepathy, *don't you think he would have used the Terran term?* Why should he use a Llralan mispronunciation?"

"All right, why?"

"Because he had never heard it any other way," Sjilla told him, pained by his inability to see the obvious. "Because he heard it from a Llralan soldier, deduced its scare-value, and used it at an opportune moment."

"You're crediting an awful lot to coincidence and the native ability of Terrans one and sundry to cause mischief wherever it'll do the most good," Sarno pointed out dubiously.

"Would you rather believe in bloodthirsty and unstoppable spooks?" Sjilla retorted. "Spooks capable of reaching out and lifting your hair even as we stand here talking, surrounded by the armed might of Empire?"

Sarno glanced behind him in spite of himself, then looked shamefaced. "You're getting almost as good at that as Donovan."

"I ought to be. I learned straight from the horse's mouth, so to speak."

"The what's mouth?"

"Never mind—back to the case of the five Unaffecteds not accounted for. Or the six, counting the Spook. For your information, one other besides Donovan and Harris and Rierson and Nogales *was* on Risstair. Hogate Yoganda. He was a crewman on the same ship as Nogales, but he didn't create as much of a disturbance and therefore went unremembered. Tell me, do you remember Nogales?"

"Do I ever! He jumped his ship—a trader in port taking on a cargo of furs—and spent the better part of five Llralan months in the bush. I had search-parties combing the wilds for *siveb* around the spaceport," Sarno moaned.

"And the ship? Did it head for home without him?" Sjilla asked.

"Not on your life! I refused clearance until he was brought back. Even made them help look for him. They were really hopping mad!" His eyes lighted at the remembrance. "Wasn't anything they could do, though. So Yoganda was aboard, eh?"

"That's right—and he remembers hunting Nogales very vividly. Including brushes with certain forms of local wildlife."

"Marqs," Sarno identified. "Marqs, by the stars! Yes —I believe the ship lost two crewmen to the marqs before Nogales was finally caught. . ."

"He also remembers a certain flower, falling asleep in a pleasant glade despite his fear of marqs getting him while he slept. . ."

"He needn't have worried—marqs know as well as the aborigines to give the territory of the *xil'tressk* a wide berth. . ."

"That makes five," said Sjilla. "Four more and we're home free. Maybe when we figure out what makes those four immune—those four who have never traveled to Risstair, or even out of this system—we'll figure out just who this Spook of Baxter is, and a way to gather him into the fold."

"And what progess have you made in that direction?"

"Little, very little. We know that Jennifer Nogales is the jilted bride of Paul Nogales and happens to be six months pregnant; we know that they spent the few months of their life together in Butte, Montana, at the boarding house of Margaret Cassidy. We know that when Nogales ran out on her, she returned to San Francisco— her hometown—and her parents put the law on Nogales, and that he was in jail on Venus awaiting extradition to Earth on charges of wife-desertion. Insofar as the Nogales couple and Margaret Cassidy are concerned, we seem to have interrupted a true-to-life soap opera with our ill-timed invasion.

"We know that Richard Rayburn, Sr. and his son were very close, as is demonstrated by the pathological hatred displayed by Rayburn, Jr. at the very sight of an orange face since the death of his father, and his flat refusal to co-operate with questioning. We know further that torture would doubtless only drive him over the brink of insanity to which our invasion, the violent death of his father and the sudden ending of his world has pushed him. Therefore he is about as useful to us as his dead parent."

"And what does all that add up to?"

"A common denominator, I'm sure. All that remains is to find it."

"And then what?"

"And then we reduce all factors to that common denominator, scoop up the Spook of Baxter, and proceed with an orderly if somewhat tedious Conquest Duty and round of negotiations with the Federation. Or at least you do. I take a ship home for Llrala and a well-deserved vacation."

"As easy as that, eh?"

"As easy as that—I hope."

"That makes two of us. Go to it, and good luck."

Drelig Sjilla turned and went down the High Walk's stairs with the same slow, deliberate pace he had mounted them, across the floor of the bridge and out into the corridor leading to the intra-ship cars.

He had a job to finish.

XIII

The desk lamp glared down on a confused jumble of papers and cards and scribble sheets. The ship's artificial night had long since come, the lights dimming to a dusky half-illumination meant to be restful after the hard white light of working hours. The officers of the *Risstaixil* not on duty had turned in one by one, until only his light remained burning.

Sjilla ran the back of his hand across weary eyes and sipped gently at a cup of stimulant. Spread before him was all the information he could dig up on nine Terrans at such short notice. Later, he could go through files of various townships and cities, add bits and pieces. There would be hospital records, police records, military records—reams and reams of paperwork for each and every individual under observation. He sighed. Such work was nothing new to him; comparing the two, he felt that the Empire had more bureaucratic red tape than did the Federation.

Sighing again, he read back over the topmost grouping of papers and cards, searching for what he knew must be hidden somewhere within. The name on the driver's and pilot's licenses was Daniel Rierson; along with those two essential cards, the man caught in Venusburg had possessed the usual credit cards, social security, identity cards naming him a member of a gun club, an explorer's club. . .

And on and on.

There were also old, dog-eared passports for a good dozen worlds, at the rate of three planetary clearances per card. He read the report of the capturing officer again.

> ". . . Prisoner offered little effective resistance, this being limited to one blow of the fist, which rendered Trooper Vorn insensate. Corporal Zaquor hit him over the head with his rifle butt. The blow caused no serious damage, but was very effective in insuring the prisoner's tractability until such time as we could get him to a suitable place of detention. . . ."

He grinned wryly. Being somewhat of an authority on reports of all types and natures, he was of the opinion that three-quarters of the Empire's population went around nourishing an unfulfilled desire to be adventure-tale writers.

Taking a fresh sheet of notepaper, he twirled it into his typer, adjusted it and started making notations on the facts concerning Daniel Rierson that he considered cogent.

NAME: Daniel Rierson

OCCUPATION (At time of Invasion): Semi-retirement.

OCCUPATION (Beginning of War): Hunting guide, Venusian game farm.

POSSIBILITY OF HAVING BEEN ON RISSTAIR: Positive.

VISITORS ON RISSTAIR: One young boy—a nephew.

SUPPORTIVE EVIDENCE: Snapshot picturing boy exhibiting a dead tarl and a Terran rifle against typical Risstairan background.

PRESENT LOCATION OF VISTOR: Unknown.

Leaning back, he contemplated what he had written. Very concise, very informative—but not very. Had Rierson really ever encountered the *xil'tressk* and become immune? Had that big-boned youth in the picture?

Sjilla searched among the litter, again found the picture. He held it up to the light—a faded color print showing a solemn-faced youth with a strained grin on his face. That was all—plus one very dead tarl, a brand-new looking rifle and Risstairan trees in the background. He reversed it, read the blurred inking on the back: *Uncle Dan—Something to remember me by . . . Summer of '09.*

—Jim

Just that, and nothing more. He turned the print back to show the picture, studied the boy therein somberly.

Summer of '09, he thought. 2409 Terran count. And where was I that year—twenty-three years ago? A hardly dry behind the ears recruit tailing Terran tourists around Llrala Central, my sole duty to keep them from taking pictures . . . as if they didn't have better ways of getting information. But we didn't know that then—and I kept people from taking pictures.

He stared at the young, unlined face grimacing up at him. *And you—you were having your picture taken. Jim. Jim Rierson? Jim, the mighty hunter of tarl . . . your uncle was probably proud of you.*

Did you ever wonder, Jim, why two perfectly sane races capable of bridging interstellar space should be at one another's throats? Did you? And did you ever conclude that it is not two life-forms warring, but two philosophies? The possible persecutors and the afraid-of-being-persecuted—the ones with fear, and those without? Do we all believe in this vendetta against Terra and the Federation? No. But the Empire is old, Jim—older than the Federation, much older. We attained the stars once before, Jim—and were smashed by a people fearing our youth and military strength. The Workargis . . . if you've ever heard of them you probably don't remember—not just another boring history lesson out of many such, when your mind was out roaming the fields of Terra.

But we remember. We went out that first time innocently and came running back, whipped and wiser. It was determined then that such a thing should never happen *again. The Supreme Council was formed, and created the High Command, and we became a militarily-oriented culture. When we went out the second time we went in armadas, and prepared. The Workargis were repaid with interest for their earlier destruction—but the fear would not abate, and the pattern was set. We've met seven cultures capable of offering fight, Jim—yours is the eighth. We are still mighty, and the seven are our vassals. Perhaps we could have stopped after one or two . . . but not now, Jim. If we stop, we falter; if we falter, we are destroyed. We have sacked too many planets, murdered too many races, looted and raped our way across too many star-years to ever go back and start again. We are fighters. If we do not fight, we do nothing.*

During the years of peace, conditions are always tranquil throughout Empire, Jim—there aren't many assignments for the likes of me. But let a strong civilization loom on the star-map and all of a sudden we must cope with conspiracies on a thousand worlds, all aimed at toppling the tyrant—us—and ushering in the champion of the downtrodden—you, or someone like you.

So we go on. We fight here, against you, and if we lose then the book can be closed when the last Llralan is hung or shot or simply dumped out an air lock. If we win, we will go on, our borders forever expanding—always looking for the lurkers in the Big Dark that would creep in upon our suns and surprise us if we dared to rest.

Where will it end? It is my job to make sure that it does not end here—and I will do my job. We are weary of the witch-hunt, but we will not lay down our pitchforks. Perhaps . . . perhaps some day, if we search far enough and long enough, we will find peace and a restoration of our confidence. But now we are running scared across the face of the cosmos, and your people are in our way . . .

So tell me, Jim—have you given up hunting deer and tarl? Have you turned your guns on bigger game—on us? At any time during that summer of '09 did you fall asleep for around nine hours beside a flower the natives of Risstair call xil'tressk? *Perhaps while waiting for tarl to come down to water? Are you now out there somewhere, looking for more targets for your rifle? Or do you sleep innocently within some bomb shelter, never dreaming that the thing you feared has come upon you—that the defenses are breached, the invaders are within the walls?*

He came out of his reverie and laid the picture aside, picked up another billfold at random and typed the name:

NAME: Richard Rayburn, Sr. (deceased)
OCCUPATION (At time of Invasion): Prison Guard.
OCCUPATION (Beginning of war): Prison Guard.

At that point he stopped, finger poised to strike a key. *Prison Guard,* the license said, but that wasn't all—not by a long shot. Rayburn's home town was listed as Blue Hills, and the state the license had been taken out in as Yagari—*and the planet as Venus.*

He scrabbled through the litter feverishly, came up with a neatly-typed list of names and places. Nine of them in all—the names of the nine Unaffacteds, and where picked up. Rayburn's driver's license made his home Blue Hills, on Venus, but the list said he'd been picked up in New York City, on Terra. And that wasn't all. The license had his occupation listed as prison guard. He picked up another sheet of paper—the dope sheet on Paul Nogales—and compared it with the list of names, and then with Rayburn's license.

Rayburn was a prison guard in Blue Hills, Yagari, Venus; Nogales had been a prisoner in Blue Hills, Yagari, Venus. Which led to the inevitable question: How many prisons were there in Blue Hills? Reading further, he found the answer he wanted, whether there were ten or two hundred: Richard Rayburn had worked for, and Paul Nogales been imprisoned in, the same institution.

Sjilla finished the cup of stimulant at one gulp, oblivious to the fact that it was stone cold. It looked as if he had stumbled onto something here. With carefully suppressed excitement, he appraised his find. Five of the nine Unaffecteds had been on Risstair—Donovan, Rierson, Harris, Nogales and Yoganda. Four had not—Margaret Cassidy, Jennifer Nogales, the Rayburns. That two of them—the two women—had been linked to Nogales had been apparent early, just as the relationship between father and son had been obvious. Now he had discovered a possible tie-in between Nogales and Rayburn Senior—that of prisoner and guard. Nothing definite yet, of course, but a start. Find a common denominator, he had told Sarno—that's what is needed. A common denominator. Find that, and the pieces of the puzzle will fall into place.

Reading back over the items spread before him, it looked very much like that common denominator was going to be none other than Mr. Paul Nogales. Just how and why, he couldn't begin to guess—but the pattern was clear. Landlady, wife, jailer—all that was needed now was to find some way to tie Rayburn Junior into it, discover what it was that made those whose lives Nogales had touched immune to the Dust, and present the whole neatly-wrapped package to Sarno. Visions of the sweet-smelling meadows of home began to parade across his mind's eye. With any luck at all, he could have this wrapped up and be on his way within, say . . .

His train of thought snapped. For suddenly superimposed over that pleasant parade he had imagined an inimical, faceless figure with a rifle and heard a somewhat hoarse voice speaking in heavily-accented Llralan—a disembodied voice crackling over the airwaves with its somber message.

He climbed to his feet and went and looked along the corridor at the closed doors behind which the big brass of the fleet slept. Slept as if they had not a care in this world—or any world. Turning, he walked to his single porthole and peered through the thick unshielded glass. He couldn't see much; a misshapen moon was riding high, throwing silvery light on drifting clouds. The over-all effect was one of extreme cold. And cold it was, he knew, on the plains of Canada—colder than it ever got on Llrala, except at the extreme poles. Though the cabin was warm, he shivered.

"Fly north," the voice over the radiophone had urged before communication was cut. Fly north. But how far north? North Georgia—Tennessee—Michigan?

Or Canada?

Where are you, Spook of Baxter? Hiding? Running? Or watching with glittering, emotionless eyes as another soldier walks into your sights? Where are you? Who are you? What are you thinking now?

He yawned hugely. He was tired, worn to a raw edge by too many long nights and tension-filled days. He had uncovered something tonight—but tomorrow would be soon enough to follow it up. He turned down the desk-lamp, undressed and crawled into his bunk. His head had hardly touched the pillow before he was asleep.

But his dreams went round and round, and kept coming back to the image of a perennially young and grim-faced boy stalking across the land with a rifle and a strained grin, in search of orange-faced, two-legged game:

"I killed twenty-eight Larrys today, Uncle. Let 'em think they had me—then lowered the boom . . ."

And of an unseeable, enigmatic personality maneuvering men and machines to their destruction at the beck of a living captive:

"Grandpa, they've been giving me a hard time."

"Don't you worry, son—I've been giving them a hard time, too."

His dreams skittered confusedly round and round, and were not free from fear.

XIV

Atlanta, titan of the southland—city of silver towers and soaring roadways, of six million residents and numberless travelers, city of swarming traffic day and night, on the surface, above it and below—Atlanta, city hermetically sealed from the elements by centuries of scientific contriving—city that never sleeps . . .

Was sleeping now.

Silence had come to the sprawling metropolis, silence unknown in these environs since the white man had driven out the Indian and began his long climb to the stars.

And winter. The cold blue, clean-washed sky was uncluttered by any manmade object; a smoky haze softened the already graceful lines of expressway and office building alike and imparted an unreal, fairy-like atmosphere to the whole vista. A wizard's work in grace and enduring beauty, rising out of the ground-mist of a crisp Georgia morning like an idle daydream, and in appearance as fragile and transient as the dream itself.

Atlanta lay slumbering in the bright cold sunshine and time seemed to drag its heels . . . and had the city builders been gone a week, a fortnight—or an eternity?

With an effort of will, James Rierson extricated his thoughts from the gentle spell being woven upon them by the strangeness and utter tranquility of the scene before him. This slumberous fairy castle was, after all, only Atlanta. The city that had been his home for as long as he could remember. A different-seeming Atlanta, to be sure—but still Atlanta. Out there somewhere were the back-alley and serviceway playgrounds of his youth—the hidden sordidness the Health Inspectors never seemed to find, nor the City Beautification Committees care about, for it was hidden by a stroke of an architect's pencil, and who worries about what cannot be seen? Hidden byways ruled by jungle law—by the law of survival of the fittest, by the mandate of the quick and the dead. It was a world he had known only passingly in youth, for his parents had much preferred that he keep to the manicured and well-tended playgrounds that were a credit to the city and much safer for a child not versed in the finer points of survival by tooth and claw—but a world he had come to know more intimately of late, when his natural habitat became the world of high-vaulted courtrooms and paneled law offices and chilly white prison cells. For when two laws exist within the same boundaries there is certain to be friction—and between the law of books and balances and the law of the jungle there is no middle ground.

Rierson sighed deeply. He had chosen the law of books, unfortunately. Unfortunately because the older laws ruled Atlanta now—and ruled the whole planet. Garbage-littered alleyway and dome-roofed court building, both came under the same code now: *kill or be killed.* There were no laws to hide behind, no police to summon, no recourse left to the weak, the meek or the inept.

The exhilaration he had experienced yesterday at escaping the Llralan deathtrap in Baxter had long since evaporated, leaving a cold chill in its place. What could he have been thinking of to believe he could do any damage to the forces arrayed against him? He could kill a hundred—a thousand—and it would mean nothing to them. The angry buzzings of a tiny insect—an insect that would, in time, be swatted. Perhaps . . . perhaps, had he spent his life dodging the minions of the law, always sleeping with one eye open and his suitcases packed, he might have a chance. With instincts honed by dozens of brushes with the law, by any number of hairs'-breadth escapes, he might manage fairly well—slipping through cordons, eluding search-parties, resorting to knife and gun when no other course was open to him. But such was not the case. His had been a planet-bound and very ordinary kind of life—with one short time-out for that one stellar voyage as a youth. He'd attended school, graduated from law college, become a practicing attorney. He spent the bulk of his vacation time hunting deer and ducks in the vast managed wilderness around his vacation cabin, and occasionally reminisced idly of his one great adventure into interstellar space.

That was it. He was a good lawyer, a passable rifleman and a lousy wingshot. None of which especially qualified him to carry the fight single-handed to an enemy that outnumbered him ridiculously and overtopped him in resources to an even more fantastic degree. They had a space-fleet, an air force, an army. He had himself. Which didn't add up to a heck of a lot. Not with his ammunition almost gone and his morale at an all-time low.

One thing was sure, though. He had one thing in his favor: he was still free and whole; he was still—within the limitations placed upon his activities by Llralan patrols—his own man. How long he remained that way was strictly up to him. The Llralans would try equally hard to get him whether he was actively resisting or moping along bewailing his fate. Does one care, when one swats a bothersome mosquito, if the insect is despondent or not? Answer: one does not. One only cares whether one has swatted accurately and if the pest is removed.

Therefore the best thing the mosquito could do to vents its feelings would be to dodge the swats and continue to bite back. Perhaps it could even infect the swatter with malaria, or something.

Which was all very well as far as the analogy went—but analogies don't win wars, or even battles. Thus far the mosquito and the giant had been sparring blindly with one another, and the mosquito had been coming off pretty well by comparison. But he had the uneasy suspicion that all that could change very abruptly—that the giant had been slapping vainly with his right hand while his left lay quietly by, waiting for a clear shot. And once he took aim with that left, it would be all over but the burying. To avoid such an abrupt funeral, it would behoove the mosquito to keep the giant from taking aim by keeping him off balance—a monumental task in itself, and surely impossible if the mosquito didn't know more about what would serve the equivalent of giving the rug his titanic opponent was standing on a good firm yank.

What did he know now? He knew that apparently the entire planet was sleeping as if intent on outdoing Rip Van Winkle himself, and he knew, very definitely, that the Llralans were behind whatever shenanigans had induced that slumber. He knew that some of the soldiers in Baxter—as indicated by that overheard conversation at the stairwell—regarded him with a half-superstitious fear, and he knew that at least one of them was scared absolutely silly by the thought of someone named Gremper, who could not die because he was already dead.

Now *there* was a promising premise. An ordinary mosquito buzzing around one's head might cause annoyance, but certainly not alarm—but an *unordinary* mosquito would be an insect of a different color. If he could imbue himself with the traits of a were-mosquito, it would help tremendously his compaign to stay free. No one in his right mind—especially no *Llralan* in his right mind—wants to take on the supernatural.

It was promising, but how to get more information? His unwilling chauffeur was close to hand—lodged in a precinct station cell—but it wasn't likely he would aid and abet the enemy without certain forms of persuasion. And that kind of persuasion wasn't included in the law texts he had read. Again, he found himself wishing for a back-alley education of the sort that might inform a man on the more delicate aspects of persuasion by knife.

By knife . . .

He unsheathed his hunting knife and held it up for inspection. The blade was long, wicked looking and razor sharp. A light stroke would open the Llralan pilot's veins as effectively as bleeding a deer—but to what effect? The Llralan could probably stand the sight of his own blood better than Rierson, and if he bled to death he would certainly disclose no desperately-needed information. He twisted the blade in his hands and it caught gleams from the sun in its mirror-polished steel and bounced them into his eyes. He stared moodily into the reflection and cursed his squeamish stomach thoroughly. Dammit, there must be *something* he could . . .

And then it hit him, having been so obvious all along that he had, of course, overlooked it: if Livar expected a spook, why disappoint him? If he thought himself to be in the clutches of the terrible Gremper, why disillusion the poor fool? Why not play it up big, confirm his darkest suspicions and affirm his gravest terrors?

He put away the knife, hefted his rifle. The more he thought of it, the better he liked the whole idea. He grinned at the sky. One snow job coming up!

But first, ammunition for his weapons—and some food. As a full-time spook, he was going to need more sustenance than the wind riffling his whiskers could provide.

He was unable to move; his arms were lashed cruelly, his legs strapped to the chair with his own belt, his throat and forehead encircled by strips of cloth, holding him ludicrously to attention in his seat. Nowhere was there actual pain; only the utter inability to move chafed at him, threatening to push his mind over the brink of insanity.

All around was utter, unrelieved blackness. His eyes, wide-starting, focused on the tiny yellow pinprick of light emanating from a point before him and centered on his face.

Behind the light, shrouded in darkness, a voice was speaking slowly, haltingly and with a heavy accent.

"Now . . . we get some . . . answers. You will co-operate . . . or suffer."

"I will co-operate, Gremper," Livar acknowledged, unable to control the quaver creeping into his voice. He was utterly at the mercy of this monster Rekk beyond the light—if the other so desired, he could simply walk away and leave him here to go slowly or quickly insane, depending upon his endurance. He doubted that he could endure long—his mind had been in a sort of deepfreeze since Lieutenant Zo-quen and the others had left the flivver to descend into the smoke welling from the rooftop doorway . . . and had not returned.

And then the Terran had been behind him, coming as silently as a bog-spirit and unscathed, though he had strode through the very jaws of death. Surely then, this was the terrible Gremper spoken of half-jokingly, half-seriously, by those who had heard of the stories told by the legless Rekk captive. And the failure of Zo-quen to return was explained: how could he have hoped to kill, or even offer combat to, an angered ghost?

The light's intensity increased, and he shut his eyes against the glare.

"Shutting your eyes," came Gremper's voice, "is only a . . . temporary escape at best. Eyelids can be . . . removed."

Livar slitted one eye, saw a long-bladed knife being twisted slowly in the light, catching reflections—winking at him evilly. His fear rose in a solid lump to clog his throat.

"I have said I will answer," he said, striving to keep his tone strong, even. It was no use—a soldier's duty is to die in battle, amid comrades to mark his fall and carry his helmet and insignia back to the Hall of Heroes in his native town. But *this*—to die unable to strike back as the life-spark fled, unable to scream defiance in the face of death, unable even to take comfort in the fact that his death would be noted and that his sons would one day wear the proud Warrior-Sire Sword upon their barracks caps . . .

The light faded back to a comfortable glow. The knife vanished.

"You will answer truthfully—on your soldier's oath?"

"I swear it."

"Terra—Venus—Mars. All under your . . . control?"

He tried to nod, felt the restraint of the cloth, resorted to verbal response. "Yio."

"How—?"

"A Dust—a toxin taken from a flower that makes Terrans sleep. From Risstair . . ."

"*Risstair?*" The voice was startled.

"Yes, Gremper—Risstair. A flower that makes Terrans sleep . . . growing natively on Risstair."

"How long?"

"Originally, no more than nine hours, my lieutenant said. I know little of these things, but my lieutenant is . . . was . . . an officer and scholar. Pure Llralan blood—no colony breed . . ."

"How long *now?*" interrupted the voice.

He tried to raise shoulders in the cosmic gesture of bafflement, again felt the unrelaxing bonds holding him close. Frustration rose in him—and dark insanity seemed to perch on his shoulder like a carrion-bird, waiting to prey on the dead remnants of his mind.

"How long?" repeated the voice impatiently.

"I know not. Not everything is given for me to know. But the sleepers will need no food—no water—while they sleep. They hibernate, like the *toor* . . ."

"Never mind the alien similes. What is the plan?"

"The plan?"

"Yes, the plan! What does your fleet-leader plan to . . . do with three planets? The people sleep—is their next sleep to be the eternal one? What . . . purpose lies behind the attack?"

"It has not been explained fully to the soldiers," Livar returned. "But—simply—we are to hold the lives of our prisoners as the exchange token that will force concessions upon the Federation. It is Sarno's doing . . ."

"Sarno?"

"The fleet-leader."

"If the Federation does not believe that everything is as Sarno says?"

"They will. Already, a truce ship is en route here carrying observers. They will determine for themselves that attack is impossible without sacrificing the populations of the planets, and then work out the terms of the concessions." Livar spoke this last with misgivings. The Rekk's world was at the mercy of his comrades, but he was at the mercy of the Rekk. And the Rekk was just liable to be incensed enough to kill him—slowly—to vent helpless rage.

But the Rekk was speaking. "After I locked you in here I scouted the surrounding area. I saw . . . men . . . loading certain Terrans into trucks for transportation elsewhere. Why?"

"The Penmasters—"

"I do not understand."

"There are three hundred Penmasters on Terra. Lieutenant-General Quiror is the one for the southeastern United States."

"What do the . . . Penmasters . . . do?"

"They preside over a central Pen to which specimens are brought for reawakening."

"Reawakening?" Suddenly the voice was eager. "Then the sleep is not permanent?"

"No . . . not if the Antidote is . . ."

"*Antidote?* There is an antidote?"

"Yes."

"What is it? How is it made? How does it work?" The words were sharp, hammering at him as Gremper's bullets had hammered at his fellows in Baxter.

"What, I do not know—How, I do not know. It works—by awakening those who sleep," replied Livar lamely. "I know nothing of these details—"

"Are you sure? Are you sure that you are not holding back through a sense of loyalty?" The knife was again shimmering in the beam of light. "I would hate to believe that. I would hate to test that loyalty with steel . . ."

"No!" That was torn from his throat. He fought the bonds madly, his fear and encroaching madness lending him superhuman strength. The straps holding his arms slipped along the arms of the chair, encouraging him to redoubled effort. "*No!* You will not vent your hate upon me! Combat, yes, torture no! *No,* do you hear me . . . ?"

"Enough," interrupted the Terran. "You are not lying. Now"—the voice took on a new note—"let's get this straight. The solar system is completely under the thumb of Sarno's fleet. All the inhabitants have succumbed to the Dust. There is no resistance to the Occupation. Correct?"

"Yio . . ."

"You hesitate. Why?" demanded the Terran.

"The Dust did not work entirely—there have been stragglers. But you know of that."

"I know of what?"

"Of the legless one. Of Donovan, your grandson."

There was a moment's pause. Then, "You will act as if I know nothing, and tell me of my . . . grandson. Then we will see how straight your tongue . . ."

"I do not know much . . ." Livar began. "I know only by word of mouth—there has been no official word, other than that stragglers had been caught. But the legless one—Donovan, your grandson—feared that your wrath would be vented upon poor soldiers unable to control their destinies . . ." Here he paused. Had that inimical personage beyond the glare taken the hint? Would he abide his living kin's wishes? There was no way of knowing.

"Go on," prompted the voice.

"He warned his guards to warn their blood-kin to beware angering you and The Others by any overt acts against the sleeping population. The blood-kin felt it their sworn duty to inform their town-brothers of the danger. It had been remarked"—Here again Livar was treading dangerous, very dangerous ground, and knew it well—"by many troopers that Terran females, while not very attractive, *were* very available, and that our homes were far and our chances of return uncertain . . . after the tradition of Empire, petitions were presented to officers and were approved, and a certain portion of the Antidote granted for the reawakening of a number of chosen specimens . . ."

The voice of Gremper was flat and emotionless. "And was this . . . recreation . . . carried out?"

"No," Livar hastened to assure him. "It was being arranged—such things take time. Donovan's warning reached them in time. Their fear of death-without-combat overcame their appetite for alien women . . ." Which wasn't strictly true, but he could plead ignorance if Gremper pointed that out.

"*Donovan—a guy named Donovan,*" said Gremper. "*So* that's *who Gremper is—and why this poor yokel is so afraid. Brother—this Donovan must be the con-man of all times! He's sold them a bill of goods from the word go.*"

"I do not understand Rekkish," Livar said apologetically.

"What? Oh! Well, don't let that worry you. That's quite all right. Well!" The voice held a tone of immense satisfaction. "That is very definitely that."

"You're speaking English again," Livar pointed out gingerly, fearful of invoking his wrath.

"No matter. You have been most co-operative. Now . . . sit very still."

Livar wondered for a moment just how else he could sit, then gasped aloud as a huge bulk blotted out the thin ray of light and precipitated the cell into utter darkness.

The bulk passed into shadow and the light sprang back. He felt hands on his bonds.

"I am releasing your hands," came the hoarse voice, so near he jumped. "You will sit still until I say otherwise. Then you may untie yourself and have the run of the cell. You will find an atomic lamp and what can be a month's supply of food, if you are not gluttonous, beside the door. There is running water." As it spoke, the shadow-shape again passed before the light and beyond, and Livar heard the door creak faintly.

"You are in a police station, in a cell," the voice of Gremper went on. "You will so remain until the duly delegated mortals come to deal with you. At present, they are sleeping.

"When they come for you, you will know that the invasion has failed and that I have dealt with the invaders."

There was a muffled clang, and Livar was alone. He lost no time in finding the lamp and switching it on, basking in the glow as might an entombed miner bask in the sun upon coming to the surface. And then the full import of the Rekk's last words hit him and he sat down weakly, all pleasure at being unbound gone. He thought of his fellows out there—thousands, aye, tens of thousands of soldiers and their weapons: searguns, blast cannon, rocket launchers—tanks, flivvers, the massive spaceships themselves with all their awesome engines and terrible energy projectors. Power to sunder a sun, energy to fuse it together again.

A good many of his comrades were no doubt looking for his captor right now, with all that might to back them up.

If they were not right out of luck, they would find him before long.

XV

He had the distinct impression that he'd been this route before—with minor differences, to be sure, but the format was definitely familiar. As for the changes—this cell was even smaller, if that were possible, than his former one on the *Kalistra,* and his food was no longer served personally but arrived with a *whoosh* of pneumatic air through a shielded opening and into a small receptacle. The food itself had taken a turn for the worse. Whereas he had formerly received whatever the menu of the day in the ship's galley happened to be, he was now compelled to subsist on Llralan field rations. Which, to his way of thinking, was fiendish torment worthy of the low animal mentality of his captors. And he missed his daily trips to the head—plumbing was installed right into the broom-closet of a space he now called home—and the pleasure of scaring such innocent savages as Svitta.

He still carried on one-sided conversations with Grandpa, but more to keep his hand in than in hopes of spooking any theoretical snoopers. That there were snoopers he knew almost as surely as if they were in the room with him—which annoyed him constantly when he was forced to answer the call of nature. The image of a bunch of skinny knotheads watching him through a concealed camera lens and making cracks about his alien anatomy to pass the time didn't strike him as humorous at all.

The lighting in the cell remained a constant half-twilight, and his feeling of time elapsed was impaired even more than it had been on the *Kalistra.* There were only the regularly-arriving field ration packets to indicate that he was not entombed and forgotten—that and the sensation of prying eyes. Once he had begun hoarding the empty food packets instead of sending them back when the tube glowed, stacking them neatly in pyramid-fashion like a kid with alphabet blocks in the center of his cramped floorspace. There had been no reaction, until the number of packets had reached twenty and he stood over them with prayerful countenance and folded his arms and inquired of Grandpa if he had arranged them correctly, and if he was now to be transported from this durance vile. . . .

It had been nice to see faces again, even orange ones, and even though those were seen fleetingly at best and were contorted into all sorts of dark scowls. Not a word had been spoken on their part; they had simply confiscated the food packets, while he stood under drawn guns, and went away, slamming the door behind them. Martak Sarno might not believe in spooks, but he was taking no chances.

After that, things had seemed more endurable for a while. The fact that he could still shake them up even in his present state was immeasurably heartening—that and remembrance of a bright cold afternoon in Georgia and a deadly rifle and a somber voice:

"Livar is not drunk. He is speaking the cold truth."

Somewhere, somehow, someone else had been missed by Sarno's Dust and was exploiting his immunity to the hilt. His total of dead soldiers had already far exceeded Donovan's before he was locked into this miserable rathole, and he had likely been active since—but Donovan was far from envious. More power to him.

That someone would actually remain free to irritate the invaders and put teeth in his own tales of a bloodthirsty phantom was more than he could have hoped for in his wildest dreams. Which was all very well except for the fact that he wasn't satisfied to rest on his laurels and let others have all the fun.

Unfortunately, nobody seemed interested in just what did and didn't satisfy him. Such considerations, he was afraid, weren't going to make his captors lose much sleep. He had had his brief moment with Grandpa, but events had been taken right out of his hands again—if he'd ever had a grasp on them to start with. Now it was just between that self-styled Gremper out there somewhere and all the forces Martak Sarno could bring to bear against him.

Since it was out of his hands, he would have liked a cigarette to smoke while he awaited the outcome. Which, of course, he didn't have. He pounded his pillow shapeless, tossed restlessly on the unchanged and much-wrinkled bedding.

This whole invasion business was getting to be pretty much of a drag.

XVI

Sjilla stared reflectively out the plasglas window at the azure upheavals of rock that had given the villages spread below its name. In his nostrils was the by-this-time utterly familiar stench of *xil'tressk* perfume. He was standing in a fifth floor cell of the city stockade, Blue Hills, Venus.

Turning from the vista, he looked down at the thick-stemmed plant in its window box. It was quiveringly aware of his presence, tentacles curving stiffly, gas ducts secreting furiously. Sjilla was the first meat on the hoof it had had contact with for long days, and it was famished. He shivered, turned away.

So easily, he thought, *are the Unaffecteds explained away. The answer was so simple it was simply overlooked.*

This was the cell of Paul Nogales, footloose wanderer, sower of wild oats, a regular star-bum by any standards. The plant was his pet, his "Tiger Lil," as he put it—a souvenir of his wild sojurn on Risstair and lugged about across countless star-years since because of a fondness for its unabashedly carnivoral nature.

Paul Nogales, wanderer, had wandered into San Francisco nine months ago—and Paul Nogales, sower of wild oats, had sown a few. But this time there had been a catch—a marriage license—and he and "Tiger Lil" had taken it on the lam, but not before having set up a cozy little love nest in a Butte, Montana, apartment house belonging to a Bible-spouting old woman, none other than Margaret Cassidy. Just he and she, and the *xil'tressk* made three . . . and then the bird had flown the nest, leaving behind heartbreak—and immunity to Sarno's Dust. Immunity for a wife who had lovingly fed hamburger to his pet and then fell asleep watching it digest. All this he had learned from Nogales, a born talker with no objections as to whom his audience consisted of, or what government they owed allegiance to, as long as they were attentive. Immunity for a loving wife, and immunity for a nosy landlady who had sensed evil in that pulsing alien flower and come sniffing around, only to get quite a noseful more than she bargained for.

The bird had flown, but not far. Warrants beamed ahead had beat his ship to Venus and police had been waiting when he disembarked to escort him to the local stockade. And Tiger Lil accompanied him. Why not? Who can object to a flower? But a flower can cause quite a stir of interest if its feeding habits are unusual enough, and prison guards are likely to remark about such phenomena at their dinner tables, and if a certain prison guard has a son scouting around for a particularly interesting project with which to wow his high-school biology teacher, and if the guard pulls a little seniority and gets his son into the cell with a camera and notebook, and comes along himself, just to make sure the no-good star-bum doesn't try anything . . .

The pieces fell together neatly, one after the other, and he was overwhelmed by the simplicity of it all. It seemed almost too easy—Rayburn Senior and Rayburn Junior struck down at the same instant by the perfume of Tiger Lil, and rushed by police courier to New York City to be put under the surveillance of the best man on off-world diseases in the system by prison authorities worried about an epidemic.

And the usual recovery from the vapor's effect, and the aroused curiosity of the medics—and then the culmination of the invasion before anything could come of that curiosity.

Nine Unaffecteds, he thought. *Nine neat and tidy answers for why they were not affected. Case closed, filed and forgotten.*

Except for one thing. Or rather two things.

The first thing was Unaffected Number Ten—the Spook of Baxter, the unknown element in all this. What was the answer to *his* immunity? The second was a little more complex, how complex he was just beginning to realize. Just how many people had come into contact with Paul Nogales over the years since he'd left Risstair? How many a floating crap game—how many a romantic tryst—had Nogales and Tiger Lil attended together? Across how many paths had they sown the seeds of immunity to Sarno's supposedly-infallible weapon?

He had accounted for nine. A tenth was making no secret of his presence.

But how many are running loose and unsuspected, and laughing up their collective sleeves? He groaned aloud. Sarno was just going to love this . . . and he could see his chances of a ship home receding further and further into the distance the harder he pursued. Plague of the Black Stars, would *nothing* work out smoothly?

A throat cleared pointedly from the cell doorway interrupted his melancholy mood. A trooper stood there.

"What is it, soldier?"

"Pardon, sir, but there is a message from Underchief Blalir. It was said to be most urgent, sir."

"I see." He frowned. Blalir was back on Terra, puzzling out leads regarding the Spook of Baxter. Maybe he had finally come up with something. "All right. Thank you." He nodded at the undulating plant in the window box. "Bring that along, will you?"

"Yes, sir . . ." The soldier sounded dubious. As Sjilla left the cell, he was stalking Tiger Lil as if he suspected her of being about to pounce on him and swallow him whole on the spot.

While Sjilla waited for the self-service elevator to come up, the trooper caught up with him, holding the plant gingerly and twisting his head from side to side to avoid its thrashing tendrills. "There's . . . a scout ship waiting outside," he said out of the corner of his mouth, busy being afraid of the plant and ashamed of being afraid all at the same time. "You may have heard it come down. It is waiting to . . . take you back to . . . Terra."

"Then Blalir has hit on something this time for sure!" Sjilla exulted. Images of home swam closer again.

"It would seem . . . so, sir."

The elevator arrived and they got aboard. Moments later and they were walking past one of the slender scout's graceful tailfins and to the foot of the gangplank, the soldier still having difficulty with Tiger Lil.

Security Underchief Blalir was waiting at the grounding site—an open, rolling meadow that did nothing to alleviate Sjilla's worsening case of homesickness by its close resemblance to the plains of northern Llrala—with a command flivver. Sjilla jumped down from the scouter's lock, sprinted across the scorched earth beneath its fins and climbed in beside him. The scout-pilot waited for word from Blalir's pilot that he was clear for lift, then took his ship up with a rush and a thunder.

When it was lost to view, Sjilla turned. "What news?"

"I think we've just about got it pinned down," Blalir said. "I'll give you a step-by-step rundown and let you judge if we're on the right track."

"I'm all ears."

"Ever since this hullabaloo started, we've been pretty sure that one indivdual has been responsible for all the fireworks, for the simple reason that we've never seen more than one man at a time, and that what fragmentary descriptions we have seem to match the same man." Blalir shrugged. "Obviously then, he was responsible for the destruction of Scout-Flit S-90980 and the demise of its crew, so we started from the beginning."

"The beginning being?"

"The red groundcar found on the highway north of Baxter, of course. Long ago it was established that it had been in the explosion that signaled the atomization of S-90980. If the car was in Baxter and the killer was in Baxter, then it was a logical assumption that they left together. That raised the possibility that the groundcar actually belonged to the killer. So we checked."

"How?"

"The Georgia Motor Vehicles Registry. I had a team of language-and-file specialists dig into groundcar registrations for the past year. The car had current Georgia plates."

"A clever observation," complimented Sjilla.

"Another logical step," contradicted Blalir. He gestured deprecatingly. "It was the obvious thing to do."

"And what did the specialists discover?"

"The groundcar was registered to a William MacFarland, insurance claims investigator, home address Waycross."

"Waycross?"

"A town of some ten thousand inhabitants," clarified Blalir.

"I see. And what did you do then?"

"I personally, went to Waycross and checked his home address. He wasn't there—not in his home, and not in his bombproof. I could have wasted a lot of time nosing around into this bombproof and that one, but I didn't."

"If this red car was registered to him, why discount the possibility that *he's* the man we're looking for?" Sjilla wanted to know.

For answer, Blalir silently produced a card imbedded in a slice of protective plastic. "My boys at the MVR cross-referenced him and came up with a copy of his driver's license. Does that description sound like our Spook? Does the photo *look* like him?"

Sjilla had to admit that they didn't. The Terran smiling up out of the picture on the card bore no faintest resemblance to various accounts of the Spook's appearance. He handed the card back. "So you think somebody borrowed his car?"

"Let's say *I thought* so. Either that, or the car had been stolen. But the Waycross police blotter showed no stolen vehicle report placed by MacFarland, and no red Catamount listed among the missing."

"So what did you do?"

Blalir leaned back against the seat cushions, ran a hand across tired features. "To save guesswork, I had MacFarland's wife carted off to the nearest Pen, dosed with Antidote and questioned."

"And?"

"I discovered that the bugs in the Reawakening routine are numerous. That set of impulses sent into the brain to prepare the patient properly for the shock of awakening to a conquered world don't seem to work." He shrugged. "She went whirly."

"And you drew a blank?"

"I didn't say that. We put her under heavy sedation and got the Interrogation staff to work on her. Got what we wanted to cover the cogent periods. Found out where MacFarland was—or was supposed to have been. Seems he left the day before the invasion to go to Atlanta for a talk with his district manager, and was going to swing south the next day to interview a claimant in Baxter. He figured to stay overnight in Atlanta, start early the next morning for Baxter."

"How early?"

"Around nine o'clock."

"Nine a. m., EST." Sjilla frowned thoughtfully. "The invasion came off around eight o'clock Greenwich Time, and the Dust was supposed to work just about then, give or take a little . . . say about . . ."

"It would have been between noon and two o'clock in this time zone," informed Blalir. "These accursed time zones would confuse a computer. But that's about right. Now, assuming MacFarland got away on time, he would either be on the road between Atlanta and Baxter, or already in Baxter, when the sirens blew."

"How do we know he *did* get away on time?"

"We don't—not for sure. But it's a pretty safe bet, else what was his car doing there?"

"Any number of things can happen . . ."

"Granted. But I thought the chance of finding the point where the groundcar shifted out of MacFarland's possession and into that of the Spook justified following up a promising lead, no matter how long the shot." He paused, took a breath. "And I was right."

Sjilla sat up straight. "You mean you *know* who the Spook is?"

"I mean I *think* I do," responded the Underchief patiently. He tapped the flivver pilot on the shoulder. "Let's go."

"Where?" asked Sjilla, as the ship lifted.

"To the spot I think the exchange took place. But to continue my tale: I thought that perhaps MacFarland had arrived in Baxter, gone in to see his claimant, and perhaps loaned his car to someone to use in the interim. Or had it sent to a garage for a tuneup."

"Or had it stolen."

"Or had it stolen," agreed Blalir. "In that case, we'd have reached a dead end. We thought we had, anyway."

"What d'you mean?"

"I had the claimant's home and bombproof checked —we got his name from Mrs. MacFarland. No luck. Then I commandeered two squads of troopers and had them go through the four main shelters and a dozen or so lesser ones that this town boasts. I passed around a description of our man and had an agent accompany each unit. No MacFarland. Then I thought maybe MacFarland had simply left his car parked in front of that heathen temple and got into the bomb shelter, and that the Spook had grabbed it after finishing off S-90980, just as he took that second car when Zowal cornered him."

"But if that had been the case," Sjilla pointed out, "MacFarland would have been in the church bomb shelter. And he wasn't."

"He wasn't," agreed Blalir. The flivver was following a wide highway at a sedate pace.

"So the car had arrived in Baxter, but MacFarland hadn't."

"That would seem to be the case."

"What came next?"

"Well, I was getting pretty discouraged," Blalir admitted, "But I had one chance left: if MacFarland and the Catamount had parted company somewhere between Atlanta and Baxter, perhaps there would be some sign of that parting on the highway connecting the two."

"That's pretty slim," Sjilla opined.

"It sure was. We go down here!" That last was directed at the pilot, and he obediently sent the ship earthward in a gentle falling turn. A square white building swam up toward them, centered on a field of concrete festooned with fuel pumps and maintenance racks.

"A gas station," Sjilla said humorously. "We running low?"

Blalir answered with a shadow grin. "This," he said, "is where MacFarland and his red Catamount became separated."

"So your long-shot paid off?'

"My series of long-shots paid off," amended the Underchief. "There were a lot of gaps in the trail that could have completely thrown me off. As it turned out, I was lucky."

The ship sat down with a slight bump and Blalir climbed out, Sjilla following. The Underchief led the way to the station's office, passed within and waited for the other to join him.

There were two unconscious Terrans on the floor, breathing with that abnormal Dust-induced slowness. A youth in coveralls, and a round-faced, portly man. Sjilla knelt beside the latter, patted his pockets and came up with a billfold. "You've already checked this, no doubt."

"Yes."

He flipped it open to see for himself. "William MacFarland, age forty-seven, occupation: insurance claims investigator." Closing the billfold, he replaced it and stood up. "Congratulations on a fine piece of work."

"That isn't all," Blalir said, untouched by the praise. "Come on back outside."

He followed him into the bright, heatless sunshine and across the pavement to a Terran aircar squatting to one side of the building. His observant eye picked up scars in the pavement ending under the ship's runners. "Landed in a hurry," he commented.

"Yes." Blalir opened the ship's door. "Have a look."

Sjilla inspected the interior, noting a musty smell of old pipe tobacco and Terran gun oil. "Owned by the boy?"

"No."

"Anyone else on the premises?"

"No."

He gave a deep sigh. "Looks like you're onto something. Had it checked with the Motor Vehicles Registry?"

"In the process now. The information should be coming in at any time."

"Good. I—" With a muttered exclamation, he bent over and picked something from beneath the edge of the driver's seat, turned it over and over in his hands. "Tell me something," he said thoughtfully.

"If I can."

"You don't happen to remember the caliber of those bullets the Spook uses to such good effect, do you?"

"The caliber?" Blalir looked lost for a moment, then, "Oh . . . you mean that decimal designation signifying the diameter of a slug-thrower's bore. No, I don't. Sorry."

"Well, I do. It's .300. A long-range, steep-shouldered, spitzer-pointed .300 caliber hunting round. Packs quite a punch."

Blalir's face showed that he hadn't the faintest idea what his superior was talking about. "So?"

Sjilla held his discovery up to the sunlight, rotated it so that the bronze casing gave off fitful gleams.

"This," he said. "This, too, is a .300."

XVII

"The Terran delegation, my general, awaits your pleasure." Blanatta stood with exaggerated stiffness, resplendent in full-dress uniform.

Sarno nodded. "Show them in, Blanatta—and then carry out your orders."

Blanatta bowed, stood aside. "General Sarno will see you now."

Five glum-looking Terrans filed in—three military men and two civilians. They were followed by a pair of neatly-pressed, starched, creased and polished paratroopers who waited for Blanatta to exit, then closed the door and took up positions on either side of it.

"Gentlemen"—Sarno gestured at the length of the conference table—"be seated."

They sat. Five carefully blank faces were turned toward his; five pairs of carefully veiled eyes bored into his own. It happened that the two generals sat on his left and the two civilians to his right, so that he was face to face with the white-hatted space navy fleet admiral who comprised the fifth member of the Delegation.

They were good, Sarno gave them credit—they showed nothing of the conflicting emotions that must be pounding behind those expressionless masks. They could have as easily been here on one of those highly formal social calls, such as he had received when military administrator of Risstair, as to bargain for the lives of three billion of their kind.

He smiled faintly, feeling the strong wine of victory and power pulsing like molten lead through his veins. For the very first time since arriving on Terra, he began to realize the true magnitude of what he had accomplished. Before, it had been obscured in petty details of Conquest Duty and the curiously inter-related problem of Donovan, the Unaffecteds and the Spook of Baxter. But now—now he was facing a delegation representative of the leadership of the small but tough Terran Federation, the Federation that had kept all the might of Empire at bay all these long years of semi-peace and open war. And it was they who had come to him.

The silence stretched. Finally the leftmost general shifted in his seat, uttered something like a growl deep in his throat. "You know why we're here, Larry. You've got some convincing to do. So start convincing."

Sarno raised surprised eyebrows. "Larry? My, my, general—isn't that taking military brusqueness a bit far? Especially considering the situation?"

That elicited another growl, and the Terran general opened his mouth for a hot retort. He was cut short by the civilian sitting nearest the admiral.

"Easy, Carstairs—we're here to be shown something, not engage in name-calling."

The general fidgeted but subsided, and Sarno regarded the stocky civilian with new interest. Anybody who could cut an irate general down to size must carry a considerable amount of weight.

"Who're you?" he inquired.

"Name's Garcia," the civilian responded easily. "Ryan Garcia."

"Garcia," echoed a phantom voice in Sarno's skull. A key word had been mentioned and the robolibrary listening in on the conversation via various mikes scattered about the conference room had responded. He pressed a stud masked from the Terrans by the edge of the table, triggering the go-ahead.

"Garcia," whispered the voice. *"Ryan X. Federation Senator, representing the North American Alliance in the Congress. Absent from Terra six months inspecting conditions on frontier worlds. Home: Miami, Florida. Married. Two children. Family Pen Rating: 1-A. Present status: in custody of Penmaster Quiror, Atlanta Pen . . ."*

He hit the stud again, cutting off the recital. "Well, Senator Garcia—you ought to feel right at home here, Canada being part of your district. You'll even get to see how the taxpayers are faring—courtesy of Empire, of course."

The dapper Terran smiled. "That's nice of you—but let me put one thing straight from the start. General Carstairs, while perhaps not the best diplomat to be found between the stars, has expressed more or less the Terran stand on this matter. We do not come here to be bullied and intimidated. We come here to appraise the situation merely, and report our findings to the Federation High Command. You have made very sweeping statements concerning your power of life and death over these three planets and their populations. Frankly, we think you're a liar."

Sarno grinned broadly. "Bullying? Intimidation? Harsh words, Senator Garcia, harsh words. And liar"—his grin faded—"that, too, is a harsh word. I like it not at all. As to my situation here . . ." He shrugged. "You will see that soon enough for yourself. I have a guided tour all arranged. It will hit the high spots on Terra, and then if you are still not convinced, I will see to it that your tour is extended to Mars and Venus as well. I will only ask this: when your ship came in, did your radiomen detect traces of combat-gabble? I know they were straining their sets. Did they?"

"No . . ." Garcia admitted reluctantly.

"Means nothing," inserted the admiral flatly. "Fleet your size, play it right, you could damp it out."

"All except the PDC's," put in the second general. "Nothing they've got could damp *them* out."

"So the PDC's are out of commission." The admiral gave an almost imperceptible shrug. "Doesn't mean system's subdued. Could be plenty of fighting going on."

"But there isn't," Sarno said. *If you discount Georgia,* he added mentally.

"We'll see," the admiral returned. "We get a chance to deviate from this guided tour?"

"Why should you need to?" Sarno inquired innocently.

A bleak smile flitted across the Terran's craggy features. "We're professionals here. Except possibly Garcia and Trenton. Don't try detouring us."

Sarno returned his wintry gaze blandly. "Don't worry, admiral—by the time you leave Terra, you'll be convinced."

"I'd better be. Two days. Absolute maximum. No word, twenty battle-squadrons drop on you like eagles on a sitting hen."

"You're giving *me* ultimatums?"

"We are," said Garcia. "And we intend to back them to the limit."

Sarno's peculiarly colored eyes chilled. "And you think I don't? For the sake of your loved ones, senator, *don't make that mistake.* Don't try to call my bluff—I'm not bluffing."

"Neither are we," Garcia informed. "Those squadrons have standing orders to proceed immediately to Terra, Venus and Mars, there to destroy all enemy forces wherever found, thereby cutting our losses to a practical minimum."

Sarno shook his head incredulously. "I seriously believe you mean that."

"We do."

"Well . . . it's nothing to me, of course. Except for the fact that, as the admiral here so deftly put it, we're professionals here, with the possible exception of yourself and your colleague. As a professional soldier, I deplore the useless murder of three billion noncombatants. But, if that is the Federation's wish, so be it. Perhaps it has to do with the population problem, eh? And, not being able to push us off our own planets, the powers that be have decided to halve that population quickly and painlessly, and put the blame on us."

Garcia showed temper for the first time. His lips thinned and his swarthy features darkened even more. "Are you suggesting . . . ?"

Sarno raised a hand. "Merely a suggestion. And why does it strike you as so repulsive? Because your wife and children are here? And what about General Raymond?" The robolibrary had been feeding him information right along. "Or Representative Trenton, for that matter. Their homes, and loyalties, are many light-years from Terra. If it came right down to a choice between ultimate defeat at the hands of Empire and simply vacating three worlds for reoccupancy, how would *they* vote?"

"Your basic premise," said the heretofore silent Trenton tightly, "is incorrect. You know very well that this war was instigated and pushed right along by your side—you know that population is not, and never has been, an issue. You have more than a thousand planets. For the six billions of us, there are fifty benevolent worlds within our borders. Perhaps one day expansion could become a motive—but not now. No . . . we represent a challenge to Empire, the mighty Empire which has thus far defeated all comers. So long as we remain autonomous, we are an intolerable blot on your record. You have four thousand suns; you want our two hundred eleven to add to that total—not because you need them, but because they are there to be had."

"But not to be had easily!" gritted General Carstairs.

"We're not here to talk politics," reminded the taciturn admiral. "We're here for proof. Talking gets us nowhere. Trot out some of that proof."

Sarno inclined his head. "A man of action." He glanced at a wall clock. "Your convincing will start soon enough. Even for you, admiral. And meanwhile"—he touched another stud in the table—"refreshments. We have *walsos* of the finest grade, and some Terran whiskies which I have . . . ah, taken the liberty of borrowing from the stocks of nearby cities."

"Looter!" muttered Carstairs under his breath as an immaculately-attired Growezi steward entered pushing a rubber-tired cart. "Freebooter."

"Please!" Sarno looked pained. "You do me injustice. Perhaps I *do* take certain liberties with the planets under my protection, but then"—his grin was that of a hunting marq—"there's not one thing you can do about it. Not one."

"We'll see," promised Carstairs feverently.

"Yes, indeed. Indeed yes. We shall see. And soon. But meantime . . . Steward! . . . you must not refuse a drink."

The Growezi padded silently forward to serve the drinks.

"Just what," inquired Carstairs explosively, "kind of a fool trick is this?"

They were standing near an air lock. The double doors were drawn back, and beyond could be seen the beginning of a weatherproof tube leading to the Terran cruiser alongside of Llralan flagship.

"This," Sarno told him, "is the tubeway to your ship."

"I *know* that!"

"Well?"

"Well, what are you . . . ?"

"Excuse me, general." Sarno walked forward. Blanatta had just appeared, ambling lazily down the tube. At sight of the Delegation he snapped into a more military bearing. Sarno met him at the lock.

He gestured at the pistol-belt strapped around the vice commander's paunchy gut. "Any need for that?"

"None. There were no Unaffecteds among the crew of the *South Pacific*."

"And what an ironically inappropriate name *that* is for the barrens of Alberta," commented a new voice.

"Back from your detecting, Sjilla?" Sarno asked, without turning.

"Back," confirmed the mocker, coming around into view. "Sirri! If looks could kill, that tall Rekk general would have cut me down to sandwich-size by now."

"Carstairs," identified Sarno. "A hothead. What luck did you have in your investigations?"

"Excellent luck. Such luck as requires a long talk with you."

"Meaning?"

"Meaning as soon as you spank this bunch of tourists merrily on their way, we can get down to the business of wrapping up this Spook-Gremper affair once and for all."

Sarno stared at him. "You mean that?"

"Am I disposed to joke about such matters?" Sjilla waved wearily. "Take care of this business and send a messenger for me. I'll be getting a needle-shower and some sleep, if Sirri so decrees."

"All right . . ." He turned to the waiting delegation. "You gentlemen spoke of proof. Through here lies the first installment of that proof. If you will follow me . . ." He ducked into the tubeway with Carstairs close upon his heels, still muttering.

Those mutters, Sarno calculated, would quickly become bellows—or be silenced altogether, depending upon what lay beneath that fiery exterior—when Carstairs saw what awaited him aboard the warship he had so recently quitted. He would find the entire crew, officers and men, sleeping deeply. But not the sleep of a weary crew after a long and tiring voyage. A much slower, longer-lasting kind of sleep.

The sleep of the Dust.

Looking forward eagerly to all their reactions, Sarno increased his pace along the creaking, faintly-swaying tunnel leading between the two ships.

XVIII

"And that," said Martak Sarno with much satisfaction "is that."

"It went well then?" inquired Sjilla.

"Very well indeed. I wish you could have seen the look on Carstairs' face when he saw what had happened to that crew. While the shock of it was still fresh, I sent them on their way with Blanatta to act as shepherd."

"A cute trick, that," Sjilla complimented him. "But then you're full of cute tricks, aren't you?"

"I like to think so, anyway—but right now I'm interested in hearing just how we go about wrapping up the Spook of Baxter and Gremper into one neat bundle. Then at least *that'll* be out of the way."

The tone of his voice made the Security chief regard him closely. "Something wrong, general?"

"What makes you think so?"

He gestured vaguely. "It's my job to know such things. Nothing *in particular* makes me think so, but something's wrong just the same. Am I right?"

Sarno sighed heavily. "You are, as usual, right."

"What's the problem this time?"

Sarno shrugged helplessly. "Nothing you can pin down exactly. Deteriorating morale on the part of the troops, for one thing. And—the robots are getting restless."

"Huh?"

"The robots. These planets are crawling with 'em."

"I know. So what?"

"So they're getting restless."

"Impossible. They're only machines. They can't . . ."

"Don't tell me." Sarno raised a weary hand. "I know every word you're going to say—I've already said them myself. Nevertheless, the fact remains."

"What fact?"

"Robots have been accosting troopers on patrol and spouting strings of naturally unintelligible Terran at them. The troopers have reacted typically for combat-trained men. They blasted 'em."

"So where's the problem?"

"The incidents are increasing too fast to suit me—much too fast. And there's something else. In some instances, the troopers didn't blast well or quickly enough. The robots escaped. Who's to say how they'll react to hostility?"

"That's easy. They'll call a cop."

"There aren't any cops. What then?"

"Look . . . they're only machines. Not men. They have a limited capability, else they'd have taken over long ago. Stop worrying."

"All right . . . if you'll tell me why fifteen troopers are missing in widely-different places for no apparent reason."

"Accidents. Alien cities are deathtraps to the unwary."

"Agreed—especially when populated by angry robots. But enough of that. What about the Spook of Baxter—of Gremper?"

"Firstly, they're one and the same. Now, what else would you like to know—his name, home address or financial status?"

Sarno expelled his breath explosively. "Positive identification?"

"Positive."

"And?"

"And it is just as I thought—the Spook is merely another Unaffected who happens to have a native ability for slinging slugs and ducking searbeams. His name? James Rierson. His home address? Atlanta. His financial status? Enviable."

"Rierson." Sarno frowned. "Daniel Rierson, James Rierson—any relationship?"

"That of uncle and nephew. And the reason for the immunity of the nephew, as I see it, is the same as that of the uncle." He fumbled in a pocket, handed across a faded photograph. "Familiar?"

"Risstair!" Sarno exploded. "A tarl—a vuru tree!"

"And James Rierson, twenty-three Terran years ago, holding a brand-new slug firing rifle," Sjilla added. He delved into the portfolio he had brought with him, brought out a large square of photographic paper, passed it over. It was a fresh print, much enlarged, of the same scene. Sarno looked it over, laid it on his desk.

"So? Why the enlargement?"

For answer, Sjilla produced a small brass cylinder. "This is the empty cartridge casing of a .300 caliber slug-thrower."

"So?"

"The soldiers killed in Baxter before Rierson started using that .40 caliber pistol and a stolen seargun were killed with a .300 caliber. We found this casing in a vehicle belonging to Rierson—the vehicle itself was fairly close to Baxter."

"What does that prove?"

"That he was in the neighborhood, and owns a .300. The rest is proven by the fact that he is not to be found in any of the nearby bomb shelters, nor lying around loose—and by that enlargement."

"What about the enlargement?"

"The rifle he's holding in the snapshot—that's also a .300. Pretty constant string of coincidences, don't you think?"

"You are absolutely sure you have the right man?"

"You want more proof? All right—descriptions of him in state files match pretty closely the descriptions given by soldiers fighting the Spook, except for the beard, which is understandable. Medical records show no depilatory treatment. And to top it off, this casing here is made by the same ammunition company that made the ones found near the bodies and in that furniture store in Baxter. Want more?"

"No." Sarno grinned. "I know when I'm licked. All right . . . you've got the Spook of Baxter—alias Gremper—tagged and explained. Wonderful. You have explained away the immunity of Donovan, Yoganda, Nogales, Harris, and both Riersons. But what about the others?"

"Oh, that."

"Yes, that."

Sjilla got up, went to the door. "With your permission, general, I shall bring on the next exhibit."

"Go ahead."

"Thank you." He opened the door, spoke to someone without. "Bring it in."

A soldier sidled through the door, grimacing fearfully and holding something out at arm's length—something that writhed and contorted violently, and lashed out at his protected arms with ineffectual barbs. A heavy and very, very familiar odor permeated the room.

"*Xil'tressk!*" Sarno ejaculated, startled out of his habitual self-control. "A *xil'tressk* . . . here?"

"A *xil'tressk* here," Sjilla agreed, as the soldier divested himself of his threshing burden with obvious relief and beat a hasty retreat. "Otherwise known as Tiger Lil, and the boon traveling companion of none other than Paul Nogales."

Sarno was staring at the aroused plant with fascination. "Your dramatic revelation would do credit to a Terran detective thriller," he informed the Security chief. "Now will you please tell we what in Parra it signifies, and just where you got that thing?"

"With the greatest possible pleasure," Sjilla replied, and proceeded to do so, leaving nothing out and finishing with, "So you see, it was the simple working of cause and effect. Donovan and Harris and the rest were on Risstair, and so were you—and they were all exposed to the Dust. When you discovered its military potential, and the High Command decided to gamble on it, it then became inevitable that your paths would cross again . . ."

"—And Nogales' unpredictable nature just added frosting to the cake," Sarno took it up.

"Exactly."

He leaned far back in his chair, shook his head wonderingly. "And, of course, Donovan being the individual he is, he could not rest content without stirring up trouble. Being captured early in the proceedings frustrated him and stimulated his imagination."

"Again correct."

"And this James Rierson—who I remember only as an overweight, distinctly lost-looking Terran juvenile seen fleetingly in the Risstair spaceport—reacted according to *his* nature, and kept reacting until he got clear . . ."

"—And earned the sobriquet 'Spook' while doing so," Sjilla nodded. "Cause and effect personified. Fling a pebble and the ripples roll on and on . . ."

"Who would ever have believed it . . . ?" began the general, and then thrust his awe at the monumental workings of Fate from him almost violently and returned to the business at hand. "Now that we know what we're up against in Georgia—or wherever he's got to by now—how do we go about rounding him up? Sirri knows he's caused trouble enough both directly and indirectly for an army of phantoms, let alone one man."

"Indirectly? How indirectly?" Sjilla wanted to know.

"By substantiating Donovan's tales—you know that. By dampening morale considerably. By making troopers more than a little reluctant to take up their stations below ground in the bomb shelters with only the sleeping—and the undead, so they think—for company. And also . . ."

"And also?" prompted the Security chief.

"Well . . . the ripples are spreading with a vengeance. There was a sudden death in Georgia yesterday—one that we cannot directly credit to this Rierson's markmanship. It occurred in full view of a platoon—they were combing a wide stretch of fallow acreage on the off-chance of flushing the Spook."

"And?"

"You have read the reports of the botanists—the ones stating that not all life forms on this planet were affected equally by the Dust?"

"I have. What of it?"

"That some isolated forms were affected not at all?" persisted the general.

"I read the report," Sjilla reiterated.

"That soldier died from a heart attack—brought on, medics theorized, by extreme tension due to hunting what he had more than a passing fear was looking over his shoulder all the time . . ."

"An ancestor-worshiper, then."

"Exactly. Barbarous custom—but that's not important. What is, is the way he was struck down. The other soldiers don't necessarily believe the medics' verdict. They think Gremper—by manipulating certain denizens of this planet which should have been sleeping—deliberately singled him out for destruction, and as an object example. They are, to put it mildly, terrified. And their terror is spreading."

" 'Manipulating certain denizens,' you said?"

"Yes—one of the lifeforms not affected by the Dust."

"What happened?"

"I'm not quite sure. The report was confused. There was some kind of eruption . . . and the trooper was dead. Keeled over in his tracks. The soldiers swear those birds were guided by Gremper's hand and killed him in some bizarre fashion."

"Birds?" said Sjilla. "What birds? What happened?"

"Maybe *you* can tell *me*, knowing so much about Terra." Sarno's voice sounded plaintive.

"I'll try. But I've got to know what happened."

"The botanist gave me a name. Or rather several names. But the words are nonsensical to me."

"Let's hear them."

"Well . . . just what, I'd like to know, is a *covey of bob-white quail?*"

Sjilla uttered a loud groan. "I was afraid of that."

"Afraid of what?"

"Some day, when we've got all the time in space, I'll try to explain it to you. Meanwhile, there's the matter of getting Rierson."

"You have some sort of plan?"

"I have a plan, admitted Sjilla. "And I think it'll work. It'd better! A covey of quail!" He wagged his head gloomily. "By the Black Stars, a covey of quail. Maybe the dead *will* start walking before this thing is done."

XIX

The steak knife made short work of the tender and succulent slab of meat on the platter before him and James Rierson forked a slice into his mouth, chewed appreciatively. These robochefs in the better apartments really knew how to broil a sirloin. And that gravy! He tore a warm, butter-drenched roll apart and sopped happily, then shoved the soggy bread in to keep the steak company.

It was almost as if he were home in his own apartment—which was located in a very similar neighborhood on the other side of the city, even had a similar floor plan—after a long day at the office or in court. Which, perhaps, was dangerous. The utter familiarity of his surroundings might tempt him into lowering his guard, might dull his reflexes. It was already somewhat difficult, under the present circumstances, to think seriously of the information he had scared out of Livar.

The interview with Livar, he was forced to admit modestly, had been a master-stroke of genius. Now he had one big advantage over the opposition: he knew what he was up against. They didn't; they only knew they weren't supposed to be having the trouble they *were* having, and that their leaders couldn't seem to explain it, let alone do anything about it.

And then, too, he knew about Bradford Donovan.

He took another bite of steak, gazed out past the gently blowing curtains at the window to the sunset-reddened wilderness of skyscrapers and spiderweb roadways that was Atlanta. A sprawling citadel in which time had come to a stop for its six million inhabitants . . . and only one of many such, one among all the scopes of metropolises and towns and villages spread across the face of three planets, the only signs of activity centered around alien spaceships dotting the landscape here and there like malevolent growths sprung up after a poisoned rain.

And somewhere within one of those grim spheres, a tiny spark of rebellion against the slumberous spell cast by Earth's conquerors, resided one Bradford Donovan, unblushingly telling the most fantastic lies—and somehow getting them believed. Looking back upon his escape from Baxter, he could now see more clearly why the overheard soldiers in the furniture store had regarded him as something more than mortal—and why Livar, poor slob, had been so terrified when he turned around and found himself face to face with the dreaded Gremper. And, though he hated to admit it even to himself, it might just be that—had not Donovan set the stage beforehand with his imaginative depiction of his militant "Grandpa"—those soldiers back there might have tried just a little harder, shot just a little faster and deprived this selfsame sirloin of being enjoyed so thoroughly.

It was, he reflected, sipping his coffee, almost as if Donovan had foreseen what would happen in Baxter and had carefully and artistically sown the seeds of fear for his, Rierson's, harvest. And all while a prisoner aboard some Llralan warship and theoretically helpless. Somehow, among all the incredible things he had witnessed or learned of since the big whitetail buck collapsed in his sights back on the game management area, Donovan's feat was the most incredible of all.

He had conceived of the interrogation of Livar as a means of discovering some lever, some slight edge, to use against his pursuers. Well, Donovan had handed it to him on a silver platter. He could become Gremper, the grandfather of his grandson—but to what avail? He could step into the role, drift across the planet from city to city like the restless phantom he was supposed to be, passing like the angel of death in the night among the invaders—with what end result? Livar had said—and Livar, if he was any judge, had not lied—that the Federation would be held at bay by threats of wholesale slaughter of the sleeping populace if it tried to push this Sarno character's fleet off Terra and out of the solar system. He had further stated that a truce ship was on the way with observers to see if Sarno indeed held the three planets as securely as he was broadcasting for all to hear that he did.

They would come in highly skeptical and be promptly slapped in the face with the devastating fact that for once the Llralans weren't over-advertising. After which, he knew, the Navy would stay conspicuously absent from this neck of the cosmos while frantic negotiations got under way to prevent Sarno's giving the order that would bloodily halve the Federation's population. Which in itself was understandable, but made it hard on him. He could wander the planet waging his lonely war against the invaders, killing a few, scaring hell out of a few more and managing to make everybody more than a little nervous—and what would come of it?

Nothing, that was what. The Navy would not intervene, there would come no figurative blare of bugles and thunder of hoofbeats as the good ole cavalry hove over the hill just in the nick of time to send the pesky orangeskins running for the far stars—and the Llralans, much annoyed by his picayune tactics, would continue to hound him until at long last he made some fatal slip and they collected his corpse. He figured he could do one hell of a job on their morale before being so collected, but it would all be wasted—a shattered morale is only valuable if there is to be a follow-up. Left alone, it would mend itself gradually, and sooner or later it would be as if James Rierson, alias Gremper, had never really existed. Just a bad memory, that was all.

He sighed deeply, pushed his plate away and poured himself another cup of coffee. Already he had acquisitioned the identity of Gremper twice—once in Baxter, and now to frighten Livar into revealing much-needed information—and he would likely go ahead with the thing. Certainly there was nothing to be gained by sitting on his hands waiting for some boneheaded Larry to stumble over him unexpectedly and get the hunt up again in full cry. And maybe, just maybe, something would occur that would break the deadlock and unleash the Navy, in which case any groundwork he could lay might prove the back-breaking straw. But playing the part of an army of phantoms was going to require stamina and dedication, and he could at least treat himself to one more peaceful night's sleep before he embarked upon his foredoomed-to-failure campaign of disturbing theirs.

He sat long over his coffee, face somber in the deepening dusk. When the last color had faded from the western sky, he kicked off his boots, placed his guns within easy reach and turned in.

There was a tiny, muffled rustling somewhere nearby. He stirred, tugged the bedcovers higher against the insidious chill pervading the room. The rustling came again, somewhat louder—fallen leaves being stirred. He turned over, still more asleep than awake, thinking drowsily that the birds were stirring in the tree outside his window earlier than usual this morning, and waited for the first trill of birdsong that generally preceded his alarm clock's ring by about twenty minutes.

The awaited avian music was not forthcoming. Strange . . .

He dropped back into a fitful doze, but ingrained habit would not allow him to drop off completely. The seconds dragged by, and an irritating little node of worry began to nag his sleep-drugged consciousness—where *was* that birdsong? Surely one of the sparrows would have emitted a few chirps by this time, and then the mocking birds . . .

But the sparrows and mocking birds had already quitted his tree by this time of year—the early frosts had killed the leaves, and the branches were too bare for their taste. After all, this *was* the latter half of November . . .

He opened his eyes and stared ceilingward in the dark. *Then what am I doing at home? Why not at the cabin . . . ?*

That thought wavered uncertainly and ended in confusion. For he had just become aware of two things simultaneously: he wasn't *at* home, and those rustlings outside weren't birds stirring to greet the dawn.

They were footsteps.

Footsteps moving back and forth in the courtyard three floors below, footsteps rendered almost inaudible by the carpet of dead leaves strewn over the flagstones—*the leaves ungathered since Sarno's Dust had done its work.*

He was completely awake now, though a trifle groggy, and the sound of purposeful footsteps in the sleeping city could mean but one thing.

Hunters.

He slipped out of bed, the room's chill forgotten, and stuffed his feet into icy boots. The open window through which the sounds came was a pale gray smear in the inky blackness. Retrieving his pistols and tucking them in his jacket, he fumbled for the rifle, found it, and cautiously made his way out of the room, skirting unfamiliar obstacles by touch.

The courtyard, in the washed-out gray light of false dawn, with its leafless trees intertwining frost-burned branches in the central garden above the green-gray masses of evergreen hedges, was like a surrealist fever dream beneath the blank and staring windows in the enclosing walls—and a strikingly proper setting for what was taking place.

For something was moving in the courtyard.

Rierson stiffened into immobility, eyes straining in the weak light, feeling something buried deep beneath his civilized veneer stir fearfully—some strange small flicker of superstitious fear that almost constituted race-memory, some residue from a less-sophisticated age and bearing no relation at all to his very logical fear of the Llralans and their guns.

Too short in stature for Llralans—he realized that as a fourth form glided from some point beneath him to join the three already grouped in the garden. The four stood unmoving, unspeaking, in a precise little circle facing one another—he *assumed* they were facing one another—and silently communed.

If not Larrys—what then? He took his eyes off them long enough to look at the sky, saw that the stars were still burning brightly, that there were no definite beginnings of a sunrise as yet. His first observation had been correct, then—it was indeed the hour of false dawn.

And just what, if not Larrys, moved in the false dawn upon a planet populated only by Llralan soldiers, the sleeping . . . and the dead? For one wild moment he considered calling out to the group and inquiring to just which graveyard they returned with the coming of the sun. But suddenly such a question didn't seem at all funny—and the Llarans, in their fear of their ancestors, seemed more astute than the determinedly unsuperstitious Terrans.

A fifth figure moved into view from yet another point of the compass, joined the four and immediately went still in perfect imitation of them.

Ghosts, James Rierson told himself, *do not rustle dry leaves underfoot when they walk. That takes solid feet with weight on them.*

Which was a pretty weak argument with the five indistinct shapes standing in that eerie little formation under the black naked tangle of tree branches in the winter-ravaged garden. Five vague specters, in appearance manlike and yet no taller than an average Terran in his very early teens, totally unrecognizable in the meager lighting.

There was a way to remove all doubt, but he had been putting it off, half-hoping the shapes would dissipate before his eyes or resolve into some familiar form—even if the form were Llralan.

The figures showed no signs of vanishing, neither did they abruptly become tarnished statues of Greek athletes or Confederate soldiers—statues do not walk about in the predawn, or stand in silent communion within an apartment house courtyard. Or did they? He rubbed a hand across his face. Anything seemed possible in this upended, invaded, sleeping, weak-gray-lighted world. He brought himself up short with an effort and did the thing that would identify the silent group below.

He raised his rifle and looked through the scope sight.

And almost broke out laughing as the sick fear drained out of him.

For the figures stood out clearly in the scope's light-gathering field.

They were robots. Five Terran utility robots of one of the more popular models. Five five-foot robots standing quietly in the courtyard as if awaiting some activating signal.

But an activating signal from where? Or more importantly—from *whom?*

Had the Llralans somehow managed to activate Atlanta's working force of robots and send them hunting him? It didn't seem probable, but then, of course, all laws of probability had been knocked into a cocked hat by Sarno's introduction of the Dust into the war. The old rules simply didn't apply any longer.

The scope's crosshairs shifted to the nearer robot's right hand. In those steel fingers reposed a silvery, fragile-looking gun—a stunner. And each of the others were similarly armed. So if the Llralans *had* sent them after him, they had not been able—or had not chosen—to override their inbuilt inability to permanently harm human beings. If spotted and shot at, the worst that could come of it was stun-shock and capture. Which in its own way was bad enough, but didn't arouse the cold terror that being awakened from a sound sleep to face the immediate prospect of violent death would have. Pure terrestrialism made it hard for him to be afraid of robots that had been an inherent part of his daily existence from infancy.

Afraid or not, soft-nosed hunting bullets weren't going to stop them if they tried anything—and he knew better than to think he could wield the Llralan seargun fast enough and accurately enough to down five robots in a stand-up gunfight if the robots had stunners and were intent on using them. The best tactic at this point would be a strategic withdrawal. He didn't *know* the robots were looking for him—but he couldn't be sure they weren't either. When faced with five gun-toting robots with unknown motives, discretion becomes, as never before, the better part of valor.

Abruptly, the robots moved. Without a sound, without a gesture, they split up and made for various doors opening onto the courtyard. Whether he was the object of it or not, a search was definitely in the offing. Time to exercise that discretion before he had to put his valor to the test.

He left the apartment, walked quickly to a stalled escalator then down, his soft-soled hunting boots making the slightest whispers on the steps. Reaching the second floor he turned left, trotted to a hallway leading away from the courtyard. Forty feet long, big French windows opened onto a foyer and so to the landing stage-parking area used by visitors, mailmen and delivery services. He ran heavily across that, feeling terribly exposed, and down the gently sloping ramp that gave access to the area for groundcars.

When he reached bottom, he was on the sidewalk running in front of the building. He crossed the street, hurried through a front yard partially shielded from the windows behind him by tall hedges, and moved up an intersecting street. Two blocks away he reached the entrance to one of the sunken roadbeds reserved for emergency, maintenance and sanitation vehicles. Going down, he headed back toward the heart of the city.

Finally he felt safe enough to pause to catch his breath and gather his thoughts, choosing a spot halfway between a truck ramp and a stairway leading up and out. Those openings and the luminescent lettering naming them provided the only relief in the otherwise total darkness. Overhead lights were out; all central power sources had long since been shut off by the Llralans. It was cold here, much colder than the apartment, and the soft breeze blowing through the tunnel felt as if it were coming straight off a glacier.

Something moved in the tunnel ahead of him; a black shape flitted across the grayness at the ramp's mouth with disconcerting speed, heading right toward him.

He fired from the hip.

The concussion was deafening. Yellow-orange flame stabbed at the figure, illuminating its features momentarily. It staggered a bit, but did not go down. Rierson was only vaguely aware of coming fully to his feet and working a fresh round home. His ears were stunned by the rifle's blast and his eyes dazzled by the muzzle-flash. He waited tensely for what would happen, knowing himself powerless to prevent it, whatever it was. The seargun was in his jacket and he would never be able to reach it in time if that which confronted him were hostile. For the muzzle-flash had revealed, in the split-second of its duration, the futility of the bullet it had sent on its way.

The awful racket of echoes raised by the gunshot finally died away, leaving him pointing a useless weapon at an enigmatic adversary. The tense silence stretched interminably.

Then: "Your pardon, sir," said an apologetic voice, "for this imposition. But I must speak to you for a moment."

Rierson remained exactly as he was and said nothing.

"Sir, such a course of action would bring me extreme unhapiness, but if you persist in your efforts to deactivate me, I must take protective measures." The robot's hand came up and the outlines of a stunner were plainly visible against the weak light from the ramp.

Rierson straightened, lowered his rifle. He remained silent.

"Thank you, sir, very much. Now—may I have a word with you?"

"Who sent you?" said Rierson carefully.

"I am afraid, sir, that I do not understand the nature of your query."

"Who ordered you to come looking for me? Was he tall? Skinny? Was his head pointed? His skin orange? Did he have four fingers instead of . . ."

"Sir," interrupted the robot politely, "no one sent me. I came of my own—or rather at my master-brain's—volition." He retreated until he stood in the light of the ramp, looked upward. What Rierson had seen in the muzzle-flash's illumination was confirmed: his accoster was a bluesteel five-foot-tall utility robot the graven image of the five in the apartment house courtyard.

The robot turned. "I am afraid, sir, that the rather hasty firing of your weapon may have attracted unwanted attention. The aliens are everywhere."

Rierson stared. "You know about them—about what they are?"

"Oh, definitely, sir. They are quite a noisy lot—and destructive, too. They show absolutely no respect for private or public property. They are also"—Did the little robot's voice really change, or was that just his imagination?—"trigger-happy. One of my co-workers was brutally deactivated right before my vision lenses. It is about them that I—or rather that my master-brain—wishes to speak."

"I see. And what does your master-brain wish to say?" Rierson asked.

"That I do not know, sir. My instructions were simply to find and bring back with me a sentient human being."

"Just any human being? Not any one in particular?"

"No, sir. No one in particular."

"Hm-m-m." Rierson frowned. "And what if I don't want to go back with you?"

"My instructions were to bring back a sentient human," repeated the robot doggedly.

"And whether the human wants to go or not has nothing to do with it?"

"No, sir." The robot sounded positively near tears. "I am sorry, sir."

"Isn't that a little unusual—the wishes of a master-brain taking precedence over those of a human?"

"The circumstances are unusual, sir," assured the robot in classic robotic understatement.

"You can say that again," Rierson told him feelingly.

"I know that I can, sir—there is no just-developed impediment to my speech. Would you like me to say it again?"

"Never mind," he said hastily. He had almost forgotten how trying it could be, at times, to make conversation with a robot.

"Yes, sir—as you like. Shall we go?"

Rierson hesitated. "One last question."

"Yes, sir?"

He rapped it out swiftly, hoping to take off-guard any distant technician—if there *were* a technician—listening in on the conversation, and get a truthful answer from the robot before the theoretical controller threw in an override.

"Is your master-brain working for the aliens? Are you?"

"Sir!" The robot seemed to draw itself up to full height—illusion, surely. "My master-brain is an integral part of the Civil Defense network of this planet—what you suggest is treason!"

"O.K., O.K.,—don't go melodramatic on me . . ." began the lawyer.

And stopped.

For a light had come on in his brain.

"Came the dawn," he muttered, considering requesting the little robot to give him a good swift kick in the seat of the pants. And it might even oblige, considering the way he had been maligning its cherished master-brain. He swore softly. If ever anybody deserved a kick in the pants, he did—it might jar the brain into gear. And his brain *needed* jarring.

For he had been allowing the Llralans to push him all over the state of Georgia and doing nothing about it but shooting a few here and there. Caveman tactics—or at the very best, Apache. And he a supposedly well-educated citizen of the Twenty-fifth Century—a lawyer!

"No, sir," said the robot, a trifle huffily. "Dawn is eleven minutes and fifty-six seconds away."

"Beg your pardon," said Rierson humbly. He set the safety on his rifle, adjusted the carrying strap and slung the gun across his back. If news of this ever got out, he'd have to move away and change his name. "I most abjectly beg your pardon."

"That isn't necessary, sir," responded the robot, mollified by his change of attitude. "Now—shall we go?"

"We most definitely shall. Lead the way."

"I am sorry, sir—I cannot."

He was brought up short. "Why not?"

"Sir," the robot said, "You *say* that you will go peacefully—and then request me to turn my back and lead the way. Sir, my chest-plate is damaged. You caused that damage with your weapon. I think you'd better lead the way."

"Don't you trust me?"

"Not completely, sir."

"But I don't know the way!"

"I shall instruct you as we go. I am sorry, sir, but I cannot be too careful. After all, you *did* try to deactivate me."

He thought about arguing, but decided against it. The robot was right—and he didn't feel up to an attempt to rationalize his actions. He felt, in fact, just about as if he had been called down by a circuit court judge for eating popcorn while court was in session. In a word, chastened.

"Sir? Shall we go?"

They went.

XX

Their destination proved to be the uppermost floor of Furnestine's Shopper's Oasis, a thirty-nine story pile of metal and stone and glass in one of Atlanta's older sections. The robot followed him through the accounting and credit departments, down a corridor with the look and smell of disuse, and called a halt before a door bearing the lettering: *Control Room, Robots.*

Keeping a wary eye on his charge, the diminutive metal man slid around nearer the door, punched a button beneath a tiny grid and said, "One-Zero-Eight returning with merchandise."

The panel slid soundlessly into the wall. Beyond was a tiny room one side of which was composed of a wrap-around bank of viewscreens, switches, meters and various other indicators. There was a countour chair before a projecting metal table; on the table stood a slender microphone, a typewriter keyboard and several slots marked *In* and *Out.*

"Enter, sir," invited a voice from within.

Rierson entered. One-Zero-Eight—the number was stenciled on both shoulders—stationed himself in the doorway.

"Be seated."

That sounded just a bit peremptory—and perhaps it was. No telling what old and half-forgotten relays had closed in the big cryotronic brain behind that bank of instrumentation when it had realized what was happening to Earth. One-Zero-Eight's instructions regarding human willingness or lack of it to accompany him here had pointed that up eloquently. Furnestine's robotic master-brain had wanted a human; now that it had one, perhaps it was wasting no time in establishing just what the relationship between man and machine in this particular instance was going to be.

If that were the case, the machine needed setting straight. Rierson wasn't about to act as rubber stamp for any half-baked mechanical intelligence—and the master-brain might as well know it now.

"I'll stand."

"As you will." The mild baritone addressed itself to One-Zero-Eight, seemingly unbothered by his balkiness. "Your outer plate is damaged. Is there anything maintenance should attend to?"

"No." The robot's steel fingers touched the dent in its steel chest—the dent with the flattened slug from Rierson's rifle still in it. "The damage is to appearance only."

"Good. You have found a human. Is he co-operative?"

"Reluctantly so. He is quite on edge—shot at me the moment he detected my presence."

"That is understandable," decided the master-brain. "The only human in a city of this size—and no doubt hunted by the aliens."

"No doubt at all," inserted Rierson.

"You *are* hunted by them?"

"Earnestly."

"Yes . . . One of my finest salesmen had his brain-casque blasted by some sort of fire weapon. Highly illegal procedure."

"And just what did you do about such highly illegal procedure? Call the police?"

The master-brain's voice was pained. "Sir, I could not. The police, like everyone else with the exception of yourself, are lying unconscious in the city's bomb shelters with a much-reduced pulse-rate and respiration. But we had to take *some* action against this lawbreaker."

"Oh, definitely," agreed Rierson. "Like what?"

"We took him into custody. And I notified the continental Civil Defense Emergency Coordination Center in New York City."

"Was the Coordination Center manned?"

"No, sir—but its robotic complement is operating on an around-the-clock basis, keeping communications open, receiving reports from lesser components of the network such as myself, compiling data and drawing conclusions."

"What did the Center have to say about your taking the lawbreaker into custody?"

"Sir, I was informed that my action was well within the established code of robotic conduct permitted under extraordinary circumstances."

"That term again," complained Rierson. "Anything out of the ordinary really gives you a whopping new range of powers, doesn't it?"

"It does," said the master-brain. "That is logical: extraordinary circumstances require extraordinary measures. That is why, until such time as the police awaken to deal with him, the lawbreaker will be kept in the cell normally reserved for shoplifters or bandits—and that is why One-Zero-Eight, along with his co-workers, was ordered to search for, and bring back if found, a sentient human being."

"With the human in question having very little to say about it," Rierson appended.

"True. Ordinarily, the sentiments of the human would take precedence—but in this case the circumstances are sufficient justification for the methods employed. It must be assumed that, whatever the surface reaction, any human left awake to witness the invasion would have only one prime motivation: to drive out the invaders and restore normalcy . . . and that, therefore, appearances to the contrary notwithstanding, I am actually carrying out your will when I have you brought before me, whether or not you consent to being brought."

"That's pretty abstract thinking for a robot," the lawyer commented.

"Yes, sir—but the circumstances call for it."

"Now *there* I agree with you wholeheartedly." He gestured. "All right . . . you've carried out my will by dragging me here by the scruff of my neck. Mind revealing to me in just what manner you intend to continue carrying it out?"

"Sir, that is what I wish to speak to you about."

"I'm listening."

"Sir, as you no doubt are aware by this time, the strange sleep into which the humans of Atlanta have fallen is not confined to Atlanta—nor are the aliens. The situation exists worldwide."

"The Co-ordination Center told you that?"

"Yes. Also, I have conversed with the master-brains of other stores in the Furnestine chain—as well as those of various manufacturers and advertising agencies with which I have done business in the past."

"All communications channels are open, then? Strange. While I was downstate . . ."

"No, sir, not completely open. I suspect the aliens have blanketed all normal channels. I conversed over the emergency alternate circuits; I would have been very surprised if they had succeeded in blocking *those.*"

"I see. Go on."

"Yes, sir. Sir, everywhere are the aliens—in the air overhead; riding in heavy, clanking vehicles on the ground, occupying many bomb shelters and sneaking about like children playing hide-and-seek. They are destroying personal and public property at an appalling rate, building their own structures upon the wreckage of what they have torn down with absolutely no regard for building codes or zoning laws, and have deactivated or attempted to deactivate any and all robots trying to approach and reason with them. They have dragged sleeping humans from bomb shelters, piled them like yardgoods in their illegal enclosures, and"—the robot's voice took on a new note—"performed still further indignities upon certain of the populace."

Memory of Livar's reluctant reference to certain pastimes traditionally indulged in by Imperial soldiers upon occupied worlds when those worlds contained sufficiently Llralanoid females in sufficiently helpless condition came strongly to mind. His face tightened. So Donovan's warnings hadn't been quite as universally effective as he had been led to believe by the Llralan radioman.

The master-brain plowed on. "Sir, these injustices cannot be allowed to continue. There *must* be a stopping point—but as yet, none is in sight. Whenever individual robots try to interfere, they are viciously smashed. Stunners are no match for the aliens' fire weapons.

"The individual robots are helpless; their master-brains, individually and collectively, are helpless. The Emergency Co-ordination Centers, lacking human guidance, are helpless. We *must* act, and yet we cannot except upon such a limited scale as to assure failure and possibly incite the aliens to further overt acts against the populace. The entire robot-network is, in effect, paralyzed.

"Sir, my creators and the stockholders of Furnestine's, wished that my resources be at the service of the community in case of a civil emergency; almost all similar corporations have programmed their master-brains in a like manner, and the Emergency Co-ordination Centers were set up by the government to, as their title states, co-ordinate the civilian effort. The aliens are certainly a civil emergency; this fact has set in motion certain irreversible relays in our brains.

"But our creators never anticipated such an emergency as this. We are helpless in an unprecedented situation without direct human control—without humans to take the responsibility for our actions. Our circuits demand of us action that is presently impossible. With each passing moment, the ensuing conflict is worsened by the continuing inroads of the aliens and the pathetic vulnerability of our humans. Usually, there are the duly-delegated officers of the ECCs to take command and issue orders—but the ECC crews sleep as soundly as do the police, as my customers and clerks, as *everybody*, and there is no help to be found there.

"Sir, only as a last resort did the ECCs instruct the master-brains to order their robots into an all-out search for a sentient human being. *Any* sentient human. The search has been under way now for forty-nine hours, fourteen minutes and thirty-one seconds—and you are the sole human it has turned up across all the length and breadth of the inhabited planets of this solar system.

"Sir, the conflict resulting from our inability to take the action which our inbuilt relays demand that we take has reached the critical stage. Already, weaker brains are faltering under the strain. If it is not resolved immediately, the entire Civil Defense network will be of no use to anyone, anyone at all, for much longer. In other words, sir—we, the robots of this solar system, are in serious danger of becoming addled. We stand ready to act—*but we must have orders to act upon.*

"Sir, will you consent to give us those orders?"

Rierson was just a trifle overwhelmed by it all. When One-Zero-Eight had acted insulted by his remarks concerning its master-brain's conspiring with the enemy, and frigidly informed him that he had slandered an integral part of the planetary Civil Defense network, he had realized in an inspired flash that for him there would be no more playing the role of lone guerrilla, no more running and hiding and sniping . . . but he had half-expected a duel of wits with a strong-willed cryotronic brain hellbent on doing things its own way and making him the scapegoat for it by somehow extorting his endorsement of its methods. Such things had been known to happen. But he had definitely *not* expected being offered generalship, as it were, of the entire robotic resources of the solar system.

"Sir?" The master-brain seemed afraid its offer had been rejected. "Please, sir?"

"Very well, Percivel," said Rierson grandly. "I assume command."

"Very good, sir. Only . . ."

"Only what?"

"Sir, my name isn't Percivel."

"It isn't?"

"No, sir. Most of my humans call me Charlie."

"All, right, Charlie—let's get down to business." He unslung his rifle, leaned it against the wall and sat down in the control chair. "I want a complete report on just what's going on where—especially concerning those indignities you mentioned being performed upon the sleepers. And I want robots to stop accosting Larrys and looking under beds for insomniacs. Have all scouts and messengers called in. If they keep running around blindly, they're going to make the Larrys nervous. Make 'em nervous enough, and hell's liable to pop. Is that clear?"

"Yes, sir!" There was snap in Charlie's tone.

"Relay it, then. And arrange some way for me to talk directly to the New York Co-ordination Center if that becomes necessary."

"Yes, sir."

"This is for you personally: I want armed guards on the tenth floor of this building, and all your other personnel above that level. Any alien attempting to pass the guards is to be stunned and detained."

"It will be done."

While Charlie's meters and indicators came to life in flashing, clicking patterns, Rierson swiveled his chair so he could see out the one window in the cubby. As he watched, a high-flying flivver appeared in the lower corner, whizzed across and vanished. He smiled grimly. Let them hurry to and fro, let them look for Donovan's grandfather's ghost on three worlds and in a billion hidey holes. Let them think that they didn't really have much to fear—let them ignore Donovan's warnings and have their little games—let them believe for a little while longer that all they had to contend with was one ghost, or one man.

Gremper had just multiplied himself into a robotic horde.

XXI

The alien encampment covered what had once been a square block of tall office buildings and lapped over into a pleasant little park. The office buildings were gone; their only remains consisted of several mountainous piles of rubble pushed tidily into the street running behind the camp and shored up against the building fronts across that street. A big semi-rig's tractor cab protruded from one of the heaps; the vehicles in the street had been covered.

The viewscreen that allowed James Rierson to see the entire camp while seated at Charlie's control board presented a panoramic sweep as seen from an elevated vantage point; every other screen showed it from a variety of angles. Occasionally a Llralan voice murmured from one of the sound-grids as the "shotgun" microphones likewise trained upon the camp by Charlie's scouts picked up a thread of conversation.

"The perimeter," said Charlie, "ends against the 500 Block of Memorial Boulevard on the north, extends south into Quincy Park and bends back to end against the 500 Block of Bragg Street. There are sentry posts in buildings around the camp, and several autogun nests covering strategic approaches."

Rierson grunted in acknowledgment, continued to study Screen One—the one with the vista.

The cleared space had been given over to an orderly, defensible setup which clearly bespoke the military training of its new occupants. One corner—up against the rubble heaps—had been smoothed and leveled by the same machinery that had moved the explosion-toppled former structures out of the way. This area was a motor pool, containing at present several of the huge earth-moving devices, three light tanks, fifteen troop trucks, a pair of cargo copters and one of the big jet flivvers. The number of vehicles present was never the same long—it fluctuated constantly as small but heavily-armed convoys arrived and departed on an irregular schedule. Forward of the motor pool but well back from the perimeter was a cluster of prefab huts—headquarters, officers' barracks, field kitchen and a pair of unidentifiable buildings frequented by the camp's brass and a number of Llralans in civilian clothing. Once he had watched cylinders reminiscent of the bottled gas containers used on frontier Federation planets being carried into the latter huts.

All around the perimeter stretched a line of tall, slender and evenly spaced bluesteel posts. Between the posts a vague, bluish shimmer danced—in appearance no more than heat distortion on metal. In fact—nothing living could brave that ethereal curtain and survive. At three points in the fence were conventional gates set on heavy, insulated posts. In line with each of these were plascrete blockhouses from which jutted the snouts of autoguns and blast cannon.

Within the fence—squat metal generators supplying the voltage that hummed between those seemingly innocuous posts, and continually pacing, ever-alert sentries.

"This is the installation you have chosen?" The New York Co-ordination Center's crisp, authoritative voice sounded as if it were speaking over his shoulder.

"Yes."

"A well-fortified one," the ECC noted.

"That's the point: testing my theories on a weak one would prove nothing."

"You are sure that the units of the Furnestine master-brain will be adequate to the task? The entire working force of Atlanta is yours for the asking."

"Thanks, but I'll stick with Charlie this first time around."

"Your confidence is justified," Charlie assured him. "We will not let you down."

"Heroics," inquired the ECC, "from a master-brain? I hardly think the robotic code allows for any such illogical behavior—even under the most trying circumstances."

"This is not a matter of heroics," Rierson cut in before Charlie could demonstrate how very nearly human he was by rapping out some biting retort to that. "Surprise, not overwhelming odds, is what I'm basing my attack on. That, Charlie's newly-acquired fund of military lore and a few embellishments of my own."

"I know of those embellishments," said the ECC with prim disapproval. "They make absolutely no sense to me."

"Maybe they don't, to your unimaginative brain. They will to the aliens. And that alone should make them sensible to you: if they work havoc among the aliens, and the working of havoc among the aliens is a desirable thing, then they are sensible."

"That is logical," admitted the Co-ordination Center, albeit reluctantly.

"You just bet it is."

With that he lapsed into silence and concentrated on the viewscreens before him. The voices coming through the grid were just so much noise—the Larrys in the camp spoke either too swiftly or colloquially for him—but every word was being recorded by Charlie and transmitted via New York to robot linguists halfway across the world. When and if he wanted to know what was being said, all he had to do was so indicate and a near-perfect idiomatic translation would be forthcoming. Which was only one of the services he now had at his fingertips.

Nearly thirty-six hours had passed since he had accepted command of the CD network at Charlie's request—thirty-six hours almost uninterrupted by such trivialities as sleep, and liberally lubricated with coffee. Thirty-six hours in which the very massive complexity of the robot community of Terra and her sister planets had become more awesomely apparent to him than it had ever been in his life—by comparison, the gaping holes in the Llralan Occupation were glaringly evident. Thirty-six hours of nearly continuous verbal reporting on the part of master-brains and ECC's in hundreds of towns and cities across three worlds—reports that spoke of lonely squads of troopers maintaining their deathwatch over the sleeping populace in the close confines of the bomb shelters, of fortified encampments such as the one on Charlie's viewscreens now, of armed convoys and foot patrols and squadrons of aircraft, of humans lugged unceremoniously from bomb shelters to be dumped still sleeping in the Pens or, worse, of women awakened and fitted with subsonic slave controls for the use of female-hungry troops.

Thirty-six hours in which to have the terrible omnipresence of the huge interstellar warships—both those aground and those which would most certainly be in orbit above—driven forcibly home again and again.

If he were going to turn the robots loose on the Llralans, he would have to do it in such a manner as to prevent those warships from extracting the terrible vengeance of which they were so completely capable upon defenseless robot centers such as the one in New York. Which meant he could not allow the invaders to become aware that their attackers were robots; robots can be smashed, and the humans directing those robots coerced into surrender by threat of execution of sleeping hostages.

Thus the "embellishments" he had spoken of—and of which the New York Co-ordination Center had voiced its disapproval. To the logical mind of a robot, the existence of ghosts is the veriest nonsense—and the idea of robots masquerading as something that doesn't exist borders on sheer lunacy.

But as long as his orders were carried out it didn't really matter what the robots thought—what was important was what the Llralans thought. To a Llralan, neither the existence of ghosts nor their ability to pull nasty stunts when so inclined fell into the realm of nonsense—and ghosts can be neither smashed nor coerced.

Charlie had a question. "Sir, are we to be allowed to use firearms? These invaders are not human as the word to which I am attuned is defined, and somehow mere stunning seems too good for them."

The flat, unemotional voice with which it was said seemed to underline the menace in the words. There were rats in Atlanta's wainscoting and Charlie wanted to exterminate them.

"Are you sure your robots can differentiate between the two? There are captive humans down there too, you know."

"I am sure." An image of a gun-toting Larry flashed briefly on one of the screens, superseding the Llralan encampment. "This is an invader." The picture vanished, was replaced by one of a wild-looking individual with tangled hair, matted beard and a haunted look. He recognized it only belatedly as himself.

"And this," said Charlie, almost reverently, "is a human being."

"Couldn't prove it by me—all right, you can have guns. If you can find 'em."

"Oh, we can find them, sir. Furnestine's carries quite a complete line of sporting and defensive guns. *Everything for the discerning customer*, sir—that is our motto."

"I'm sure it is," agreed Rierson. "New York?"

"Yes?"

"How're the entertainment industry robots coming along on their little project?"

The answer was not immediately forthcoming and he knew the ECC was checking latest progress. Then, "They have delved into the film libraries of the last two centuries—that's as far back as tight-beamed solido-image photography goes—and have come up with a number of film clips that fall within the general category you specified."

"Are they available for viewing?"

"Yes. Is that your wish?"

"It is."

"A viewscreen will have to be freed."

"Oh—of course. Charlie, connect Screen Eight into New York."

"Yes, sir."

While the arrangements were being made he kept his attention upon the enemy installation as seen on Screen One. A convoy was arriving, and another departing. He watched them with interest, noting how they performed their tasks with very soldierly precision.

And just how were they going to perform, he wondered, when a skirmish line of solido-images materialized out of the night and passed unharmed through their sparkling fence, followed closely by Charlie's ponderous and nearly indestructible warehousemen—when the utility hatches leading to underground roadbeds suddenly opened and emitted a stream of gun-brandishing cleaning robots into their midst? If things went according to plan, the images—which would be as weird and ghostly as Terran film libraries could provide—would throw them into utter confusion. It was very possible that some poor fool would start babbling about phantoms and the undead. That, he calculated, would be the final straw needed to totally wreck any effective resistance that might be mounted against his steel-and-printed-circuit raiders.

That's the way it *should* work, anyhow.

Now to see.

XXII

Bradford Donovan stared morosely at his reflection in a big, darkened viewscreen across the room, much depressed by what he saw. In the screen was framed the likeness of a gloomy-looking character wearing the shipboard khakis of a Federation Navy captain. The unfamiliar uniform was much too tight. But that wasn't what was bothering him. What *was* bothering him was why he was dressed like this in the first place.

The office of Lieutenant general Quiror, Penmaster of Atlanta, was a tiny room in one corner of the Penmaster's prefabricated headquarters, and at present it was jammed full. There was Quiror himself, his chief of staff, an Imperial Intelligence specialist fiddling with a slave-circuit console, and a pair of riflemen holding their guns on Donovan and the three Terrans with him—Michael Harris, Dan Rierson and Paul Nogales.

And, lastly, there was Drelig Sjilla.

He it was who had ordered the clothing change, and he it was who had explained the reason for it to them while—with the exception of Rierson—they had been compelled to strip to the skin and outfit themselves in pilfered Federation military garb.

Donovan shook his head. No, it was still impossible to believe. James Rierson, nephew of Daniel, prowling the Georgian countryside, the very embodiment of his, Donovan's, grandfather's ghost? It was too incredible. To him, James Rierson was only a vague, unimportant memory—a blurred face among many blurred faces parading before his mind's eye and reminiscent of a time gone forever. A time when Bradford Donovan had walked on living legs and wrested a livelihood from a hostile world with gun and trap and guts. But Sjilla was speaking.

". . . .The problem is very simple: we must lure into the open and capture or kill one exceedingly irritating Unaffected who has been snarling operations in this area. The solution is equally simple, but requires some explaining."

"You will have my full attention," rumbled the barrel-chested Penmaster. " 'Irritating' is a mild word for what this Spook was putting us through a few days ago—though, I'll admit, things have calmed down since he escaped from Zowal in Baxter."

"That's what worries me," Sjilla said. "It's been the better part of a Terran week since that Baxter business—without so much as a single sighting of our friend-out-there-with-the-rifle. That means he is lying low, waiting for the pressure to ease off. And when a man of his type is allowed to lie low and have time to think things out, it's a dead certainty that you'll hear from him again—and that you won't like what you'll be hearing!"

The Penmaster grunted. "I could name you a lot of men who didn't like what they heard from him last time. They heard death rattling in their own throats."

"True—but next time it could be infinitely worse. The *initiative* will be his. That is, it'll be worse if we don't do something first. That's why I'm here; here is where an air patrol with Llralasteel detectors found abandoned the flivver he used to escape from Baxter. And that's why I need the services of Colonel Visstor, here, and two rifle companies. My four prisoners"—he waved at the Terrans—"my assistant and myself will complete the cast of a little play I wish to enact for our friend-out-there-with-the-rifle."

"You and three of the Rekks"—Quiror indicated Donovan, Nogales and Harris—"are wearing enemy uniforms. Your prisoners are to be equippd by your assistant with subsonic slave controls. I smell a trap."

"Exactly right. I want our friend-out-there-with-the-rifle to see five Terrans—four of them military officers and the fifth his uncle—fighting a running battle with Llralan forces. If I judge him rightly—and I think I do—he will be inclined to horn in. And when he does"—the Security chief toyed idly with the oak leaves on his collar that made him a Federation Army major—"his trouble-making days are over. If a rifleman doesn't get him, Major Donald Shey will."

"The major being you?"

"The major being me."

"You are sure"—the hard-faced old soldier glanced uneasily in Donovan's direction—"that you are after one . . . *man?*"

Donovan grinned. In the face of overwhelming proof to the contrary, doubt as to the mortality of the Spook of Baxter was still stubbornly rooted in at least a few minds. The word had been getting around.

"Absolutely certain," responded Sjilla flatly. "I can even give you his name: James Rierson."

"And just how do you know that this . . . this *Rierson* . . . will be watching your act?"

"If he's anywhere in Atlanta, he'll be watching. Tomorrow at noon, a Terran space scout will appear at low altitude over Atlanta, pursued by half a dozen fighter-flivvers. The seven craft will be manned by robot pilots and will execute a spectacular air battle during which the space scout will destroy two flivvers and then crash in flames near the western outskirts."

"And then what?"

"And then my little troupe goes into its act, having moved to the area under cover of darkness. We shall engage in a long and noisy skirmish in which no one is hurt but plenty of property is torn up. If we draw no attention, we will then disengage and fight a running battle across the city, during which time the two rifle companies must make flame like ten and the four remaining roboflivvers—all Sarno could spare—impersonate a veritable horde of aircraft. We will make a stand, then fall back to stand again until we get results."

"That," remarked Colonel Visstor, "seems like an awful lot of trouble to go to for one Rekk."

"Does it? Maybe it does. But know this: as long as James Rierson runs loose he is a terrible danger to the perfect picture of a conquered world Sarno wants to present to Federation bargainers. Let them think that *one* thing is not as he says and they will begin to wonder about *all* things. Too much wondering, and they'll send in a fleet to call his bluff. It won't do them any good—but it won't do *us* any good, either. We need these three planets as a bargaining counter, not an untenable beachhead far behind enemy lines."

He paused for a moment, added, "Besides which, certain low-mentality elements of this fleet have been swayed by a certain prisoner's irresponsible tongue-flapping. They have been warned to keep still, but as long as Rierson runs loose it will be impossible to make them do so. Soldiers always fear the worst—that way they are never disappointed—so the tale might grow simply as a respite to boredom, and hang on until it comes to be believed. You might be interested to know that Sarno has considered this alone enough of a threat to have contemplated obliteration of Atlanta if he could be sure that would erase the cause."

Visstor had no comeback for that. Quiror made no immediate remark. The guards were silent; there was only the subdued buzz of the slave-circuit monitor in the specialist's hands.

"You cannot," inserted Donovan into the thoughtful silence, "kill what is already dead."

All eyes darted involuntarily toward him. Number One guard had started violently when he spoke, now looked as if he didn't appreciate what had been said.

"I warned you about that before we left the flagship," said Sjilla, cold anger in his tones. "I told you there would be none of that this trip."

"So you did. So what?"

"So . . . you must learn obedience." He motioned to Number Two guard. "Know how to use a lektro-whip?"

"Yes, sir."

"Excellent. Take this Rekk outside and use it. Five strokes, three-quarters max."

"Yes, sir!"

Donovan's stomach did a sick flip-flop. It seemed he could already feel those searing jolts tearing at his nerves. He licked dry lips. "You'd better not," he warned. His voice lacked the menace he had tried to instill in it.

The guard gestured with his gun. "Up, *frambule!*"

"For each, stroke, Larry—a month of torture for you . . ."

"Donovan—*shut up!*" Sjilla's fist came down on the camp table, hard.

"Let's go, *frambule.*" The guard reached for him.

Donovan started getting to his feet. "Your sons born and yet unborn shall pay for what you do this night . . ." he began desperately.

And the guard hesitated! Donovan had touched a nerve.

"Oh, for Sirri's sake . . .!" That was Sjilla, surging upright, knocking his chair over backward, striding forward. He snatched the whip from its hook on the soldier's belt, snapped his wrist. The metallic coils snaked along the floor. He pressed the stud in the whip's butt, flicked the tip up . . .

There was pain.

Donovan threw up his arms in ineffectual defense, shrank back against the wall. The first awful jolt was followed closely by a second, a third—he heard himself crying out, knew Sjilla was destroying all his carefully-wrought lies with each stroke of the whip, and knew he was powerless to prevent it.

The wracking fire along his nerve-endings kicked him off his perch and onto the floor. Sjilla's voice came relentlessly over gulfs of distance, joining the cadence of the whip . . .

"So *this* is the mighty minion of the undead? *This* the grandson protected by his grandfather? And where *is* this omnipotent guardian *now*, eh? Why does he not *hear* the cries of his troubled descendant? *Why* does he not . . .?"

There was a scream, and Donovan realized dimly that it had not been his. He also realized belatedly that the lights were out, heard Quiror threatening death and destruction for all at the top of his voice. Sjilla was cursing steadily in two languages and with an undertone of fear in his voice. Came a sharp blue dazzle as a seargun went into action. A choked cry and distant thud answered the shot. Lying on the edge of consciousness while white-hot flashes of pain rocketed through his body, Donovan tried to muster himself—tried and failed. The lektro-whip was not being used any more. He relaxed and let the darkness hovering all around pour into his brain.

Outside, the frantic crackle of searguns mingled with the guttering roar of Terran flamers and the whiplash report of many rifles.

When the lights went out, and one of the riflemen shot the other in the darkness and confusion, Daniel Rierson reacted with the cat-quick reflexes even age had not dulled. He launched his lean body at the Intelligence technician—it was he who had screamed when the lights went out, leaping up in abject terror, his precious console forgotten. The old outhunter's hand chopped once, viciously, and the Llralan would never know terror—or any emotion—ever again. With deft fingers he found the Llralan's holstered seargun and jerked it free; then he was moving for the door and in a night-fighter's crouch, trying to outline targets against what light might seep in from outside. The Llralans were still blinded by the searbolt that had killed the guard; he was not.

There! The gun swiveled, spat with deadly accuracy. The remaining guard stumbled sideways, crashed across the camp table, taking it to the floor with him. Rierson would have liked to stay and blast all the Llralan brass in the room, but there wasn't time. If the mocker had been right, his nephew was out there somewhere—and he had to be warned.

Finding the door with precision learned on hundreds of nocturnal excursions on a dozen worlds, he fired a sustained burst into the lock section, threw his sinewy weight forward violently. The door gave, and he was through into the outer confines of the headquarters hut, passing through the confusion of upset office personnel like the phantom Donovan had dreamed up to haunt the invaders, and so into the night beyond. Just outside he halted, ducked to one side and flattened against the wall.

All around was pandemonium. Blue lightning played across the area between the huts and the outside fence—and streams of brilliant red flame answered in a withering crossfire. To one side, intermittent orange flashes speared off toward an unseen target—slug-throwers in operation. The outer fence's electric veil was gone, and towering shapes loomed between the useless posts, red flame spurting from their midsections.

Something skittered toward him crablike and he brought his gun up, ready to fire.

It was a short, barrel-shaped thing hung all about with tentaclelike appendages and topped by a plastic dome. Two of the metal tentacles were bent away from its body, one gripping a pistol and the other an atomic torch.

For a long moment, man and machine confronted each other tensely. Then a red bulb glowed beneath the plastic dome and a hoarse metallic voice rasped out the single word "Human" and then it was gone, wheeling madly around the corner of the prefab. Seconds later there came a staccato burst of shots, a white atomic glare. A shriek sounded, then lurid Llralan curses.

A gun-wielding office clerk burst through the open door, halted in dismay at sight of what was happening to his camp. Thus reminded of his predicament, Rierson snapped a shot into the other's body, saw him fold without a sound, and started cautiously around the building after the little cleaning robot. Around him the battle raged. Over in the motor pool, a tank's engine snarled to life and it chugged forward, guns sniffing for targets. Five larger-than-life shapes turned as one and angled toward it with a ponderous grace that somehow brought the image of tall sailing ships to mind.

The tank's autoguns started firing, and blue light haloed the five vaguely-humanoid figures, making their steel bodies gleam and sparkle. One of the five faltered, began to stagger. From the remaining four a sudden and murderous barrage thundered at the Llralan tank. There were red incandescences of flamer-fire, the yellow-orange flash of slug-throwers. The tank slewed sideways, still firing, climbed the steep hill of rubble behind the motor pool and then, very slowly, rocked off its wide treads and crashed back like a dying turtle. Came the strong reek of spilled fuel and flames began to crackle around the battered hulk.

He wasted no more time. Heedless of the beautiful, deadly splendor of the fire-fight he sprinted straight for the inoperative perimeter fence. The fighting had moved inward, and fewer and fewer defenders were shooting back. Most of those had backed into a tight square in the wrecked motor pool, trying to load onto the available airships and fight a rearguard action simultaneously. Out here, near the fence, all was quiet, with only the odor of discharged energy and charred flesh to indicate that the battle had passed this way. He passed one of the small cleaning robots lying in a broken heap, hurdled a pair of Llralans who had fled the wrong way before the fence was deactivated, and was out of the camp.

He maintained a steady dogtrot as long as he could, and the sounds of conflict died away behind him. When bursting lungs and out-of-condition muscles called a halt, he drew back into the protection of a doorway and fought to regain his breath, cursing the seventy years and inactivity that made him tire so easily nowadays.

When his breath was coming more easily and his heart had settled down a little, he left the doorway and pushed on, exhilaration pulsing through him. He was free! No more shackles, no more tiny alien cells—free! For a while, that very fact alone blotted out his original purpose for making the break. Once more he was his own man, with an entire planet to roam and with a gun in his hand to insure his continued freedom.

But this was not Risstair, nor Gratlafn, nor New Sedalia, nor even the northern steppes of Venus nor the barren plains of Mars. This was Terra, with three billion sleeping inhabitants and horizon-obscuring cities and invading armies . . . and an enigmatic individual who did not sleep, but stalked through the cities and across the planet and killed with seeming impunity to the invader's armed might.

And time was running out for the Spook of Baxter. His nephew or not, he had to be found and warned.

Hefting his gun, he kept bearing away from the camp, sticking close to the shadows and treading carefully.

The ground-radar was filled with utter confusion. James Rierson pored over it anxiously, trying to get some kind of idea as to how the battle was progressing. The control room's viewscreens were of little help; they were hazy with smoke and lighted only by sporadic glares as one side or another opened fire through the murk.

Finally he gave up and asked Charlie.

"Sir," the master-brain said, "the battle is progressing nicely. I regret to inform you of the loss of five store-units in action, but the casualties of the enemy are ten times that and mounting rapidly. We have smashed their main defenses, split their forces and have the main group of defenders backed up against a blank wall trying desperately to load into aircraft. They will never get off the ground."

"Good, Charlie." What else was there to say? The battle was progressing nicely—but not at all as he had intended. He just didn't have the heart to tell Charlie and dampen the master-brain's enthusiasm; he was not that accustomed to the role of commanding general. He went back to studying the radar.

The Llralans were losing, all right—but they shouldn't even have been fighting. The sudden onslaught of ghastly specters chosen from among the most gruesome of all B-grade solido-image horror movies of the past two centuries should have shattered their nerve, dissolved their will to resist. But it hadn't—and, upon reflection, he realized why.

He had hit them with too much too soon—had underestimated his opponents and overplayed his hand. Before they could fully digest what was going on and get scared they had found themselves engaged in a savage firefight, and had reacted with the reflexes of trained combat troops. Almost without conscious thought they had fought back, forming little pockets of desperate resistance against the overrunning robots—fought back with courage.

Llralan soldiers had never been afraid of a fight—just a little leery of phantoms was all.

But courage was not enough this night. With Charlie's succinct rundown he was able to correspond the wildly-agitated blips on the radar to what must be happening out there. Sure enough, a pattern was becoming clearer with each passing moment. Here a spearhead slashed through, there an arm reached out to encircle and contain, and there . . .

His jaw dropped. A gap had appeared in one of the curving lines of attackers, and a small clump of blips moved through from the direction of the alien headquarters—not running scared, but moving with slow determination. Several times attacking units approached, hesitated, then turned away. Once a unit flared from green to orange, then went out.

"Charlie."

"Yes, sir?"

"What does it mean when a blip goes orange and then fades?"

"It means, sir, that the unit has been lost."

"I thought so. Get me a camera-robot to sweep . . . uh, Vector Sixteen, will you?"

"Right away, sir."

He drummed fingers impatiently while the robot got into position, watching with mounting alarm as the clump of steadily-moving dots went beyond the cleared perimeter of the Pen and entered a street.

"Robot in position," Charlie reported. "Screen Six."

"Good. Send it along Bragg Street."

"Yes, sir. Which direction, sir?"

"West. And have four armed units follow it. There may be trouble."

"Yes, sir."

Screen Six glowed, filled momentarily with swirling streaks, then cleared to show a night-darkened street only dimly visible through the robot's night lens. Walls lining the street marched ponderously by on either side of the camera, swaying slightly with the motion of the robot.

"There!" Rierson came half-out of his chair. Figures were moving ahead of the robot, moving awkwardly, several being dragged bodily along by the others. There were the gray Llralan uniforms, yes, and . . .

The picture died. Very abruptly, very finally. He switched his startled gaze to the radar in time to see the symbol representing the camera-robot wink out, and a symbol he should have noticed before move from the line of interference that was the buildings along the street and race to rejoin the departing group.

"Ambush!" he gritted. "Don't let 'em get away, Charlie! *After* 'em!"

Charlie, confused by orders that made absolutely no sense to his orderly brain, simply continued to direct operations around the Pen while the four units detailed to follow the camera-robot came to the spot where it had fallen and stopped, awaiting further orders. By the time he had settled down enough to give cogent instructions, the group of fleeing dots was off-radar. A quick change of focus revealed nothing; they must have gone belowground. He ordered a quick level shift from surface to below-surface. That, too, was a waste of time. The group had vanished as if swallowed up.

And then, "Sir!"

"What is it?"

Salesman Five-Two-One reports a lone Terran, sir—walking down Vincent Street."

"Bring him in."

"Sir, he is not inclined to come along. He is armed and refuses to co-operate."

"Oh, hell! Has Five-Two-One got a stunner?"

"No, sir."

"Well get a unit there with one. If he won't co-operate, stun him and bring him along. It's for his own protection—the streets aren't safe." This last was said with an irony that seemed to escape Charlie.

"Indeed they aren't, sir. It shall be done immediately."

He leaned back tiredly in the control chair, closed his eyes. The battle at the Pen was all but over with his robots victorious—but it wasn't the victory he had wanted. The first Terran he knew of beside himself not sleeping under the effects of Sarno's Dust had been spotted and would be brought in whether he wanted to come or not, but that didn't elate him, either. Far from it. That one brief glimpse of the fleeing group had been enough to spoil any small satisfaction he might have felt.

It had shown several Terrans being hustled away by a handful of Llralans—the very kind of Terrans whose company and advice he could have used at this juncture. Military men and officers all, from the cut of their uniforms.

"Charlie," he said. "Charlie—is the Terran reported by Five-Two-One wearing any sort of military uniform?"

"One moment, sir—I will find out." There was a pause while the master-brain communicated with its robot. Then, "No, sir, no military uniform. Only a civilian suit which Salesman Five-Two-One considers sartorially fit only for an outworld hick."

"Oh, great—just great. I finally get somebody on my side, and it has to be a bum."

"I am truly sorry, sir." Charlie sounded as if he felt personally responsible.

"Such a barbarian he doesn't even trust a robot," Rierson went on, warming to his subject.

"Sir," said Charlie gently, "in all due fairness it must be recorded that you yourself evinced no great eagerness to co-operate with Salesman One-Zero-Eight when first he contacted you. I believe he still has the dent in his body-armor made by your bullet."

"Oh, shut up! And tell me how that bunch managed to get through the lines."

While Charlie struggled with contradictory orders, he lapsed into a moody silence. Damn all logical, fair-minded robots to perdition, anyway—how can a man work up a good righteous rage when a mechanical monstrosity is looming over his shoulder to remind him of his former sins?

It just didn't seem fair.

XXIII

"You really meant it, didn't you?" The Terran general, Carstairs, faced Martak Sarno across his desk, eyes blazing.

Sarno lay back in his chair, met that gaze calmly. "And what made you think for a moment that I didn't?"

"But *why?*" That was Garcia, his face pale, his eyes still reflecting the shock of what he had witnessed. "*Why,* Sarno? We called off the squadrons, didn't we—not twelve hours after we started our tour? We were convinced—we were ready to talk terms. Why did two thousand innocent people have to die?"

"To lubricate the wheels of diplomacy, you might say." Sarno shrugged. "I didn't appreciate that little threat you leveled at me on our first meeting. When threats are leveled, countermeasures must be taken. I took them. Now . . . within forty-eight hours, I want those twenty battle-squadrons with which you threatened me turned over to Imperial forces out along the Line."

"Impossible," rasped the admiral. "Can't be done. Even in overdrive."

"All right, then—their equivalent, within a Terran week. I want twenty full battle-squadrons in Llralan hands within seven Terran days as a show of good faith on your part."

"Good faith!" exploded Carstairs. "Why, you . . .!"

"The surrender of those squadrons will sooth my ruffled feelings," Sarno went on smoothly over the general's interruption. "And bear this in mind: those ships have to be notified, get under way and go through the process of surrendering. That takes time. Also, a beam-radio message must reach me within that same span of hours informing me that my conditions have been met. Otherwise . . ."

"Otherwise?" prompted Garcia.

"The village whose occupants I executed was a small one. If at the end of seven days I have received no word, I shall have to proceed to a weightier form of persuasion."

"Meaning?"

"Meaning a municipality of somewhat greater size will be next."

"How much greater size?"

"Say . . . about the size of Atlanta."

Garcia grunted as if he'd been kicked. "You dirty . . ."

"I think," Sarno cut in blandly, "that I'll invent a new game. For every degrading epitaph heaped on my undeserving head—a new Terran corpse. Just what variety, I can't say right now. Relatives of the offender? No, that wouldn't work in Raymond's or Trenton's case. Beautiful young maidens, after a fashion, I understand, of ancient Terran literature on the subject of interstellar invasion? An interesting thought. Young children, thus confirming your image of me as a baby-eating monstrosity? No . . . I am too fond of the younglings, no matter what their race. Heads of state, tri-vid personalities, well-known and rabid patriots? Perhaps." He smiled, glorying in the power he held over them.

"You've made your point." Garcia's look held pure hatred.

"Please," Sarno raised his hand. "Believe me, senator—the choice of Atlanta as the next city has nothing personal in it, though you might assume that to be so, your family being interned there. Other considerations entirely are responsible."

"What considerations?" That admiral again. Why did he have to put in his eighth Imperial's worth? Sarno had marked him down as a potential troublemaker since first meeting—he was too sharp.

"What considerations?" the admiral repeated. "We were bound for Atlanta on our tour when the pilot received instruction to turn back. The crew of the flivver was tense and jittery all the way back. Now you say you're going to execute six million people. Quite a jump from two thousand—which were executed abruptly. No warning. You say you wanted to speed things up. Why the hurry?" His pale eyes bored into Sarno's "*What's happening in Atlanta, Sarno?*"

"Nothing. Nothing at all."

"I don't believe you. Plenty's happening. Something's gone sour. Bad sour. Now you're trying to panic us. Want to get this thing over with soon as possible." His chopped-off sentences hammered at Sarno. "You're scared, Sarno. Bad scared. Somebody's walking on your grave . . ."

"*Enough!*" It was a savage roar. Sarno surged to his feet. "Not one more word!" He regained self-control with an effort, planted his fists solidly on the desk. "Gentlemen, I have made my ultimatum. Twenty battle-squadrons, within seven Terran days, or Atlanta dies. You are wasting valuable time."

Garcia seemed drained, listless. To all appearances he had not even noticed the extent to which the Terran admiral had rattled Sarno. Now he looked up.

"And after that, what? Another town, another squadron—where does it end?"

Sarno smiled grimly. "I had thought that was obvious from the start. But of course it wouldn't have been to you—you were too busy hoping for miracles. Well, the age of miracles is long past; there are only the hard, cold facts of today. You are faced with a choice—you have been from the start. Play it my way, or lose three billion Terrans."

"If we play it your way," grated Carstairs, "we'll end up without our shirts."

"Exactly."

"But—but . . ." That was Trenton, spluttering as if some great revelation had come upon him. "But you're blackmailing us! If we let these planets die, we can never be free of guilt—if we agree what? Ultimate surrender?"

"That is a hoped-for result," Sarno agreed. "Then the war will be over, and peace will come once more. No more fighting, no more dying, no more bloodshed and bitterness. A graceful surrender makes for the smoothest integration into Empire."

"Never!" snapped Carstairs. "Never! I'll fight you with my bare hands first! I don't know about these three billions here, but I'd rather die than . . ." His voice trailed off uncertainly.

Sarno spread his hands. "That is your prerogative—it always has been. Surrender or death. The choice is yours entirely—it is completely up to you. You hold your destiny in your hands—I am simply the instrument of your destiny. But remember: you hold the destiny of these planets in those same hands. And time for decision is running out. For six million Georgians, it will run out in seven days." He resumed his seat. "You will, as before, have free use of the *Risstaixil's* transmitters to consult with your superiors. I suggest you do not waste the time remaining," He nodded to the guards.

As the Terrans filed out, he studiously avoided the gaze of the admiral—that character was getting to be an extreme pain in the neck. Sarno cursed himself for allowing him to get through to him so easily.

He had the distinctly uneasy impression that things were slipping out of his grasp and beyond his control. He had set a series of events in motion by his discovery and use of the Dust, and now it looked as if those events had taken on a life of their own. Atlanta—Atlanta was a glaring example. Quiror's command massacred—wiped out almost to the man. The specimens chosen for Reawakening—including Ryan Garcia's family—missing, presumed spirited away by the unidentified attackers. Four Unaffecteds missing and unaccounted for. And one of them was Donovan.

Donovan! The very name was enough to make him boil over. Donovan had started it all—Donovan and no one else. Without Donovan and his wagging tongue, there would have been no Gremper, no Spook of Baxter—no unrest and ill-concealed fear among the troops. James Rierson—if indeed it were he in Georgia—would have caused not one millionth the consternation with his stubborn refusal to be killed if it hadn't been for Donovan.

And now Donovan was gone. Vanished without a trace. Somehow, deep in his heart, Sarno knew he was not yet rid of Bradford Donovan—that he would yet rue the day he had let Sjilla talk him out of inverting him over a slow fire. Bradford Donovan would never have been killed as an innocent bystander in a gun battle—that would be too easy. Donovan—as witness that marq-attack so many, many years ago—died hard. Donovan who had made his life miserable on Risstair, who had come back to haunt—he flinched at that word *haunt*—his crowning achievement, to confound his perfect invasion.

He got up, walked to a porthole. Sjilla was the only one who'd ever come close to giving Donovan pause—and Sjilla was gone, too. Somewhere out there were both of them—and he had no doubt, none at all, that Donovan had at last gained the upper hand.

Donovan, Donovan, Donovan . . . *Sirri,* he was sick of that name! He ground a knuckle into tired eyes. If only Sjilla had escaped. With Sjilla, he would have had a chance.

But Sjilla was gone, and there was no recalling him.

Sarno felt like weeping.

(To Be Concluded)

in times to come

Next month the cover story will be "A Case of Identity" by Randall Garrett. It's another exploration into the strange world of 1964 A.D.—the world that developed from the Anglo-French empire that stemmed from King Richard, when he came back from the Crusades and ruled England and France wisely and well . . . and a world in which Magic, rather than Science-as-we-know-it developed. Of Master Sean O Lochlainn, Licensed Sorcerer, and Lord Darcy, the Duke's Agent, seeking the oddly missing Marquis de Cherbourg, of magic . . . and as disciplined and organized a science of subjective phenomena as we have of objective phenomena!

Which will be in great contrast indeed to the conclusion of "Sleeping Planet," where ghoulies and ghosties and things that go boomp i' the night run rampant in a most undisciplined—and lethal to Llara!—manner. Very fantastic—very unscientific indeed. At least it looked that way to the Llaran occupation force, hounded, harassed and harried by Headless Horsemen and Spiteful Spirits and the dread jack o'lantern!

■ THE EDITOR.

How to make a robot speak English

continued from page 16

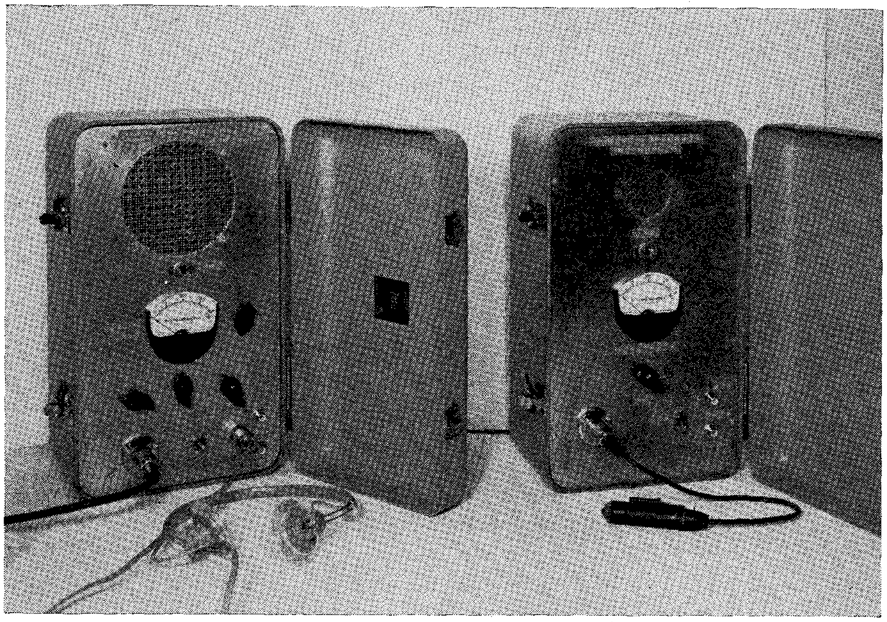


Figure 11. Transphonemators, Porpoise to Man on the left and Man to Porpoise on the right.

In this application, a correspondence was made between a particular pitch of the porpoise whistle and a human phoneme. When the porpoise whistles 18 kc, the to-human translator says "eeh." When the porpoise whistles 5 kc, the to-human translator says "ah"—and conversely. Thus a human speaking ordinary words has his voice translated into equivalent porpoise whistles, and when the porpoise whistles, the translation is into ordinary human words.

We have avoided some significant problems in English in the construction of the first translators by using only pulse stimulus, corresponding to voiced sounds. The fricatives (s, f, ch, sh, et cetera) of English require noise stimulation for their synthesis, although the recognition system shown remains the same. There are no severe problems in dynamics, since the program of shape changes provides them, but the problems of attack were simplified. The system consists of a method of recognizing τ_1, and producing a whistle of arbitrarily selected pitch to correspond. As τ_1 changes in speaking a word, the whistle executes a contour in the frequency domain. The contour for "ball," is shown in Figure 12. When the retranslator traces this contour and adjusts τ_1 to correspond with the agreed on relationship, the to-human sound is "ball." The retranslator adjusts the time between two pulses to correspond the phoneme to the pitch of the whistle. Any person saying, "ball" will generate the same shape of contour, but its position may vary, providing the same realism from person to person which is natural. The porpoise whistles seem this way in nature, and may be for the same natural reasons—there being porpoise children, too. The result is that not only is the word preserved, but some of the character of the voices retained. One thing is missing, the pitch of the voice. We have a translator which speaks only in a male voice, but modulates it pleasantly according to a scheme Dick Spencer devised.

There seems, at this writing, no fundamental difficulty to having a robot with a full English vocabulary. The PPM codes required can be delivered in pulse or hiss to have both voiced and fricative phonemes, and the dynamics of attack, modulation—as in a well-modulated voice—and emphasis, are further information on the program, but not on the code. And our robot may understand and speak porpoise as well as English if we wish. ■

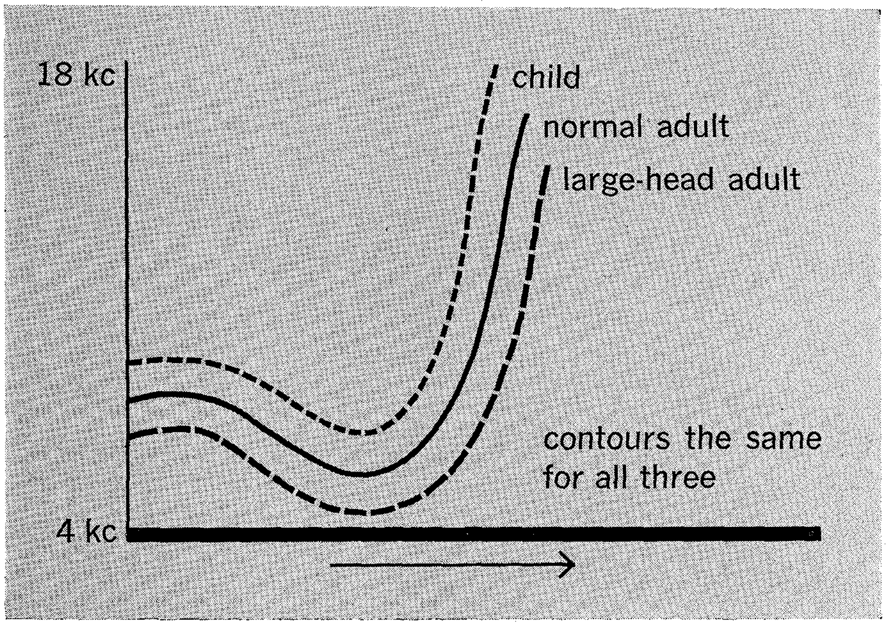


Figure 12. Frequency contour for whistle translation of "ball". Contour is the same shape for all three.

Relativity Episode No. 1

PHILIP A. M. HAWLEY

Once upon a time there were two stars, three observers, and a very, very, long steel shaft.

In the beginning these six things were arranged as indicated in Figure I. The shaft is between the observers and the stars, so that none of the observers receive any sunshine from their stars. None of these objects are moving with respect to each other.

During the night, the shaft is accelerated along its length in the direction of the second observer, and in a few hours has reached such a speed that its relativistic contraction is a factor of ten, after which it maintains this constant velocity.

The problem is a simple one, which, if any, of the first two observers will be in the sunshine by the next morning? Only three unique answers are possible, namely both of them, one of them, or none of them, and surely one of these answers is right.

At first thought the answer seems obvious, since the shaft has a light-year to go before passing the first observer, and eleven to go before passing the second, this can hardly come about by the next morning. Both of them must, therefore, be in the dark all the next year.

But we've forgotten relativity! So what actually happens? Relativity indicates that its speed is so great that by the next morning the shaft has shrunk by a factor of ten and is only 1.1 light-years long—remember the shaft has a constant velocity now. Since the observers have not moved and are still ten light-years apart, at least one of the observers must be in the sunshine, and perhaps both of them, since we might just as well put the shaft in the middle as not.

Somehow all of this doesn't sound exactly right. Maybe the "shrinking" is only apparent and not real. However, this doesn't really make sense either, since at least one of the two would be able to reach out and touch the shaft but be unable to see it! (Only small objects "disappear" when they go too fast to be noticed.)

If we assume that the shrinking is real and keep any spot of the shaft below the velocity of light, a large portion of the shaft must have traveled many, many times the speed of light during the shrinking, since it happened over night. Equally ridiculous.

Relativity puts no limit on the acceleration of a body, so this is no way out of the problem, and to make matters worse it is "space" that contracts, so that there is no inertia involved. We can use a shaft made of dust and get the same results if we accelerate each individual particle, since there is no mechanical strain from space contractions.

We could put a separate co-ordinate system on each atomic particle, which only seems to confuse the issue, since we must refer all of this back to our original co-ordinate system in the end.

Fear not kind reader, all we have to do to get the answer is to ask the third observer, who will surely tell us that, if we join him and wait long enough, we'll be able to *see* what happens.

(Naturally we students of the atomic age know what *really* will happen is . . . is . . . . .

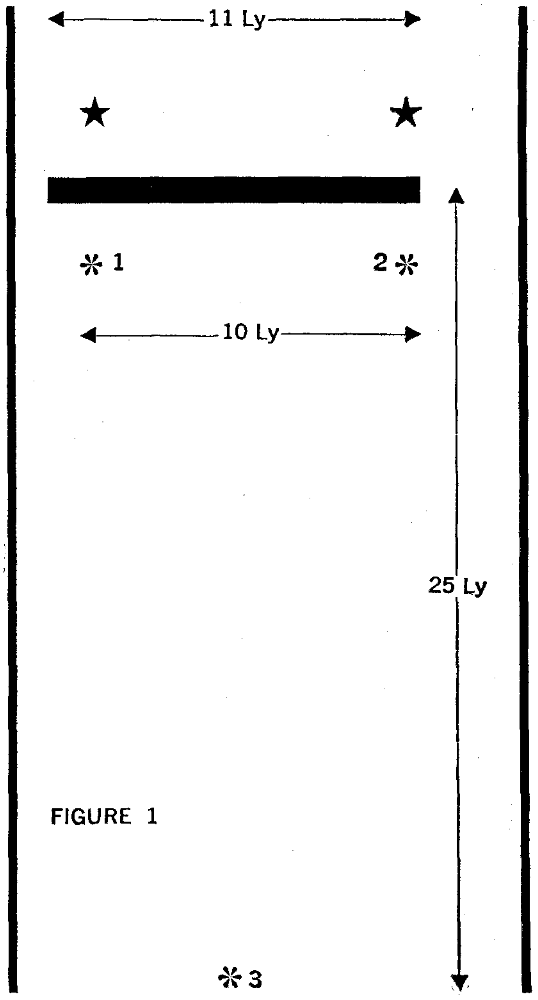


FIGURE 1

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P. SCHUYLER MILLER

Magic and Mechanism

I suppose it takes a pretty venerable Constant Reader to recall the change which has taken place in our attitude toward magic since the great days of *Weird Tales.* The change, I believe, was in ourselves—in our culture—but John Campbell was its entrepreneur through the pages of *Unknown Worlds.*

To the generation that survived into the Depression years, the supernatural still existed. But it has been the credo of science fiction, and of the *Unknown* school of fantasy, that there is no supernatural. Anything that exists is natural, and once that existence has been demonstrated, science can and should set out in search of the laws that control it and through which it operates. Today's writers do not deny magic—they seek a mechanism for it.

You may be startled, incidentally, to learn that H. P. Lovecraft, supposedly the epitome of the "old-fashioned" weird tale, was, on the contrary, a pioneer in understanding and using this philosophy. You'll find this discussed in an excellent little fan publication, "Lovecraft: A Symposium," a few copies of which may be available for $2.00 from Leland Sapiro, 1242 37th Drive, Los Angeles 7, California. This is a transcript of a discussion at a meeting of the Los Angeles Science Fantasy Society, with two old friends of Lovecraft—Robert Bloch and Fritz Leiber—among the participants.

It is in this period that parapsychology—"psi"—has established itself as a slightly more respectable counterpart of Victorian "psychic research," though the two now embrace pretty well the same field. Yet, if we are to take the evidence of the popular books, parapsychology is still struggling over the threshold that science fiction passed long ago. It is trying to prove that psi exists and doing very little to show how it works.

The latest book to demonstrate this discouraging attitude is "Parapsychology: An Insider's View of ESP," by Professor J. Gaither Pratt of Duke University (Doubleday & Co., 1964; 300 pp.; $4.95). Although a little more anecdotal than the books by Dr. J. B. Rhine, Pratt's book goes over the same old ground. There are interesting chapters on the Long Island poltergeist case which attracted a good deal of publicity in 1958, and on experiments with animals. But, with ultra-scholarly caution, Dr. Pratt does not venture any suggestion of what parapsychologists think may be a mechanism of psi or ESP.

To experience the mechanism of magic, today's reader has to turn to science fiction, and particularly to such writers as Andre Norton. Books in two of her current series appeared almost together this spring: "Ordeal in Otherwhere" (World Publishing Co.; 221 pp.; $3.50), which is a sequel to "Storm Over Warlock," and the Ace paperback "Web of the Witch World" (Ace Books No. F-263; 192 pp.; 40¢), which continues and perhaps completes the story of "Witch World." The hardback book is nominally for young people; the paperback can be read without prejudice by anyone.

In both of these books, extraordinary powers over men and nature are shown in action, and are called magic. Yet by the way the stories are told, and the attitudes the characters have, it is very clear that this "magic" has its laws and is real and as controllable, when the way is known, as electronic or nuclear forces.

In "Ordeal in Otherwhere," the Power of the Wyverns of Warlock is clearly psionic. The heroine, Charis Nordholm, comes to share it and the theme of the book is the growth of her and the Wyverns' understanding that this magic of telepathy and teleportation is natural and controllable, and can be used by Earth men and women as well as the females of Warlock. In a sense, the story is about the discovery of a science in a time of stress. (Outsiders have set up a base on Warlock, have found a physical means to counteract the Power, and are trying to gain control of it.)

The story of Simon Tregarth's transportation to a world in another continuum, where fully human beings are struggling against the superior science of semi-humans from still another world, began in "Witch World." Here, since Simon cannot share them, the powers of the Witches of Estcarp are not so clearly rationalized—yet the forces of Kolder, which they are fighting, are purely physical if not understandable by our physical rationale.

In fiction, Andre Norton makes these forces believable as rare natural phenomena that some people can use. She has done the same thing in her other books. Similarly, nearly forty years ago, "Doc" Smith made his supposed subatomic phenomena so convincing that his readers felt they understood what was going on. This, unfortunately, the real scientists of psionic powers have not yet managed to do.

NO FUTURE IN IT

By John Brunner • Doubleday & Co., Garden City, N. Y. • 1964 • 181 pp. • $3.50

John Brunner should be no stranger to you and two of the eleven stories in this collection were published here in Analog. The rest are from a variety of English and American magazines, for this young English author has been selling SF since he was seventeen. With a totally different approach, he keeps making things uncomfortable for his colleagues up in the top rank of British SF writers. Among other things, he's a grand storyteller.

Another feature of this collection which I enjoyed, though it may give you the willies, is the opportunity given the author to preface each story with comments on it and why he wrote it. I suppose if every publisher were to insist on this, it would become deadly—but I still enjoy some of the editorial comments on stories in *Ellery Queen's Mystery Magazine* as much as the stories.

The title and jacket story is a twist on the "Sorcerer's Apprentice" theme, in which a hapless medieval sorcerer calls up a time traveler instead of a demon. It's fun in the old *Unknown* vein. "Puzzle for Spacemen" is a kind of future detective story, in which a ship with a dead man in it drifts into the midst of a construction project in deep space and stirs up all sorts of problems. The solution of the murder is a bit anticlimactic.

"Fair" starts out like just another well described bit about the tawdriness of the future we see ahead, but has a nice twist to it. "The Windows of Heaven" is another gimmick yarn about the end of the world—an English specialty. "Out of Order" is a comedy of future business, preposterously worked out. "Elected Silence" is emotionally the most compelling of the lot, as it makes convincing the thing that has happened to the mind of a man cooped up by extraterrestrials for half a lifetime. And "Badman" is a slight, but effective, view of a future in which society is manipulated in a peculiar way.

The two stories that were published here are "Report on the Nature of the Lunar Surface"—very short, technical, and outrageous—and "The Iron Jackass," which is my own favorite in the book. This is not wholly because the hero has his roots in Pittsburgh folklore; it's a grand story about people and the stubbornness of custom. "Protect Me From My Friends," on the other hand, is a stream-of-telepathy bit that presents a grim little possibility in not just the right way for my taste.

Finally, "Stimulus" utilizes biological research results in a nicely straightforward way. It's the kind of story that should have been here. So read it anyway.

IN DEEP

By Damon Knight • Berkley Books, New York • 1963 • No. F-760 • 158 pp. • 50¢

This evidently reached Pittsburgh very late, or perhaps we didn't get it until the second printing. For sustained high performance, I'd say it's the best short story collection of last year. It has variety, it has story values, and it's good reading from start to finish. If you limit yourself to this magazine, you won't have seen any of the stories here.

"Four in One," which opens the book, is a problem story. Four members of an exploring party have been engulfed and partly assimilated by a protoplasmic creature on another world. They have to discover the possibilities of their new symbiotic life, then use it to solve their personal problems.

"An Eye for a What" is a comedy of cross-purposes, as another far-world expedition tries to plumb the mores of an extremely nonhumanoid race, and to discover what constitutes punishment to these exasperating aliens.

"The Handler" is a grim little masterpiece about an evening in a sick future society—in its way, almost as accusing as Fritz Leiber's classic "Coming Attraction."

"Stranger Station" is the one story in the lot that is already pretty well known from anthologies. With each rereading you can see a little deeper into its picture of terrible pragmatism.

"Ask Me Anything" is the strangest of the collection, with its teaching robot from the deep past wrecking an inhuman society.

"The Country of the Kind" plays on Wells' plot in a hopeless sort of way.

"Ticket to Anywhere" opens a window on the endlessness of the universe in a strangely old-fashioned but effective way.

And "Beachcomber" is, of all things for Damon Knight, a gimmick-ending story—and a good one.

If you didn't buy this, why didn't you? If you can still find it, get it.

THE GAME-PLAYERS OF TITAN

By Philip K. Dick • Ace Books, New York • No. F-251 • 1964 • 191 pp. • 40¢

It's by no means another "Man in the High Tower," and it has almost as many wheels within wheels as van Vogt at his most complicated, but it hangs together better than most of that gentleman's "classics."

Red China and the United States have clobbered each other, and the sluglike vugs of Titan have moved in to take over the shreds of human civilization. Most of the survivors are sterile, and there are very few of them in any case, so the conquering vugs have introduced the Game—their own high passion, and apparently that of the surviving United States.

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Never fully described, the Game seems to be something like Monopoly-for-real, with elements of poker with a marked deck. By the whims of the Game or the failure of a bluff, men and women are married and unmarried, cities and states change hands. "Luck" means the ability to conceive children as a result of one of these pairings. Telepaths, precognates and other psi-potent men and women add to the complications—and so, it develops, does the fact that some of them are disguised vugs. Pete Garden, a most unheroic hero with suicidal tendencies, turns out to be the pivot around whom all this starts to spin until the centrifugal force pulls it apart.

I had fun, but I'm not nominating it for a "Best of 1964."

LAMBDA I

Selected by John Carnell • Berkley Books, New York • 1964 • 175 pp. • 50¢

These are seven short stories and novelettes which were published in the English science-fiction magazine, *New Worlds*, and have not previously appeared in American anthologies or collections. They are not the editor/compiler's favorites—the best of those have been published over here—but they are stories which were especially popular with readers.

To my taste, by far the best of the seven stories is the last, John Rackham's "The Last Salamander." This is that rare thing, a story which brings a technology—as distinct from paper/blackboard/textbook science—vividly to life. I suppose John Rackham does work or has worked in a modern power plant, so that his picture of a great coal-burning plant that hatches the last of the mythical salamanders really lives. Remember what Theodore Sturgeon put into "Killdozer"?

My second choice is the most controversial of the lot, Brian W. Aldiss' novelette "Basis for Negotiation." This was unanimously rejected by American editors, in spite of the author's popularity over here. It describes a near future in which Red China and the United States are at war, an English government has remained doggedly neutral, and the hero and others are determined to bring the cowards down and honor old pacts. Just watch the values twist as you read it.

New Worlds has published and you have read in American paperbacks far better stories than the rest. They suggest that English authors are still doing competently what American writers were doing ten or fifteen years ago, but that is hardly a fair picture. The title story is the kind of thing you would have found here back in John Campbell's early days—a technological problem, worked out in its own frame of reference. There are three good time-traveling yarns: George Whitley's "All Laced Up," about future antique collectors in Australian suburbia, Philip E. High's "Routine Exercise," about a nuclear submarine that suddenly found itself in a very wrong and very hostile time, and Michael Moorcock's "Flux," whose hero goes to check up on the future. The gimmicks are old stuff, even in England; what is fresh is what good writers do with them.

Finally, there is a sociological story about the population explosion and the little man who is searching for one real thing in the regulated artificiality of the megalopolis: "Quest," by Lee Harding.

"Ted" Carnell has had to give up his magazines as a result of the tsunami of American paperbacks which has washed over England, and although a new publisher has taken them up, you may be seeing more of these authors here and in other American magazines. I hope so.

DOCTOR TO THE STARS

By Murray Leinster • Pyramid Books, New York • 1964 • No. F-987 • 176 pp. • 40¢

I hardly need say anything about this book except that it is a collection of Murray Leinster's "Med Service" stories, about the problems faced by Calhoun and Murgatroyd while trying to keep the galaxy healthy. The three novelettes—Calhoun's messes are too complex to be tidied up in a few pages—cover a good deal of his so-far-published career.

"The Grandfathers' War" was the third Med Service story published here in what was still Astounding, back in October 1957. Medically, it's perhaps the most interesting of the lot and has a good deal to say about the friction between generations. "The Hate Disease" was here last August—it's called "Tallien Three" in the book—and it is also based on a biological twist. Why should a planet be going mad in a disgusting way? Remember?

The third story, "Med Ship Man," was in *Galaxy* last October and is the least of the three scientifically, although it's still a pleasure to watch Calhoun and Murgatroyd at work on a puzzle.

Probably the fact that the other stories in the series have been in various anthologies has kept Murray Leinster from having a Med Service book with more pretentious binding. And probably more people will read and enjoy the stories this way.

THE MACHINERIES OF JOY

By Ray Bradbury • Simon and Schuster, New York • 1964 • 255 pp. • $4.50

Ray Bradbury—who is getting to look more like Willy Ley every day, to judge from his jacket portraits—must have fallen out of favor with the lit'ry set. This book sneaked out with no advance ballyhoo, and I haven't seen it mentioned in the usual review media—and that far ahead of the pack I'm not!

Actually, this is a "for the record" report, for there is very little science fiction or fantasy in the collection—even Bradbury type. Most of the stories are from *Playboy* and the pre-1963 *Saturday Evening Post*, and most of them are reasonably "straight" stories about the dark corners of tormented people's minds. For the record, the Bradbury style is not so obtrusive here—the stories are more stories and less exclamations.

But let's get on with the SF.

"The One Who Waits" is brief,

wispy and early-Bradburyish with no previous credits. It may be an early discard or late addition to the "Martian Chronicles." A wraithlike survivor of the ancient Martians possesses human explorers.

"The Vacation" is the best of these: just an afternoon in the life of the last family in California, and perhaps the last on Earth, living among the crumbs of an earlier time.

"Boys! Raise Giant Mushrooms in *Your* Cellar!" has a new mechanism for the ET takeover of the world. "Almost the End of the World" gives us a world without television or radio, where old values are painfully and joyously recalled. And "To the Chicago Abyss" shows us a desolate future in which an old man's memories scrape together a little meaning for the survivors of holocaust.

In the other stories—there are twenty-one in all—haunted people in Dublin, in Mexican villages, in small American towns go through their grotesquely distorted lives. What hope and joy they find in life seems to come out of themselves, not from others. Bradbury's world is always a lonely world.

THE DEATHSTONES

By E. L. Arch • Avalon Books, New York • 1964 • 192 pp. • $2.95

This is an attempt at a future mystery novel that might have been a corker if Mr.—or Miss—Arch were Isaac Asimov or Randall Garrett cum Laurence M. Janifer. As it is, a very promising situation blaahs out and the solution is telegraphed very much in the clear.

Space Bums Jack Landers and Boyd Norton are on the planet Isis, on the fringes of the colonized galaxy, trying to pick up business for their decrepit ship. They have had to ship a crew of nonhumanoids, and then, under odd circumstances, get a set of peculiar and all-too-human passengers on a cruise to a planet without life. In traditional form, established long ago for storm-bound country hotels, moldering mansions and what have you, everyone is peculiar in some way—and there is a nosy female sociologist who has something on everybody on the ship. Not long after they land on the aforesaid uninhabitable planet, she is murdered. It's up to our heroes to fit together the bits of odd evidence to save their own necks.

Really, it's all very promising, but just a bit too flat.

THE WONDER WAR

By Laurence M. Janifer • Pyramid Books, New York • No. F-963 • 1964 • 128 pp. • 40¢

Yes, Virginia, there is a Laurence M. Janifer, and here he is with a book that seems to prove that Randall Garrett does his bit on those F.B.I. yarns.

The "Overdogs," protagonists of the story, have been sent out to keep burgeoning civilizations from getting too big for their britches. The Earth-based Confederation is doing very nicely, expanding through the galaxy, and it doesn't want any militarily or scientifically efficient competition. In the name of humanity, it can't go around wiping out promising civilizations, so it has adopted the very humane technique of preventing the kind of war that might give science a shot in the arm.

In this case, the Overdogs are involved in both sides of a pending struggle on the Earthlike world, Wh'Gralb. They are ingenious and hapless by turns, and are not helped in the least by having a freshly graduated, extremely feminine officer along to interfere with smoothly grinding sand in the wheels. Unfortunately, she no sooner begins to do her stuff than the author finds his hands too full and claps her in jail for the balance of the book.

This is sort of like the starlet who turns B-girl.

TEMPLES, TOMBS AND HIEROGLYPHS

By Barbara Mertz • Coward-McCann, Inc., New York • 1964 • 349 pp. • $6.95

Now that the "secrets of the ancients" theme has pretty well died out in science fiction, you may not care about what the ancient Egyptians were really like. If you do, this is by far the best popular account of them I have seen in a long time.

Mrs. Mertz has a doctorate in Egyptology, though her publisher doesn't claim that she works at it. If she doesn't, it's a shame, for the field can always do with someone with a sense of humor and an ability to make bones and inscriptions come alive. Although her book is subtitled "The Story of Egyptology," the science and its practitioners come into her account of the roller-coaster rise and fall of ancient Egypt only where they are needed.

Instead, the reader looks over the Egyptologist's shoulder and sees through his eyes as politicians, antiquarians, curio hunters and scientists all do their bit to unravel the buried history of the Two Lands. In the process, the author makes clear how it is done, but also brings to life the people whose story is unfolding, and with them shows the forces that forged civilization for the world from which most of us stemmed.

THE MOON AND THE PLANETS

By Josef Sadil • Paul Hamlyn, London • 1963 • Illustrated by Ludek Pesek

You may be wondering why I have broken my rule about listing books by other than American publishers, and why no price is given.

This is one of a series of "picture books" by teams of Czechoslovakian writers and artists, whose English-language editions, published in London, have been remaindered over here at a great variety of prices. The earlier books have been, most outstandingly, a series on early animal life and early Man, written by Josef Augusta and beautifully illustrated with reconstructions by a Czech artist, Zdenek Burian, who is miles ahead of anyone else I have seen since Charles R. Knight.

Now Tudor, a New York publisher, has advertised these previously remaindered books as new titles and added some more. I bought the new Augusta-Zdenek "Book of Mammoths" at considerably less than the listed price in a local remainder shop. This astronomical picture book, on the other hand, has up until now been priced the same—$9.95—both as an import and a new book. You see what you can do.

The publisher does not give any background for author or artist, but Josef Sadil is apparently a Czech science journalist. His text is extremely simple—possibly a result of editing—but it is also right up to date with results of last year's Mariner pass past Venus. Ludek Pesek, the artist, is no Chesley Bonestell as his partner is no Willy Ley, but their book is the closest we have had to the classic "Conquest of Space."

Where Bonestell is a romantic and a meticulous draftsman, Pesek is a realist and an impressionist. His arid vistas of planets and their satellites are probably closer to the real thing than Bonestell's, but they leave the impression that our Solar System is a barren and rocky place with little to attract tourists—as indeed it is. For some reason, the magnificent gatefold plates are broken up into three full-page panels by white bands, but they remain magnificent. It's just that Burian's monsters are so much better.

I know one museum which picked up the earlier books for reference. Watch your remainder stores and see how low the prices goes on this one.

STILL MORE REPRINTS

ESCAPE ON VENUS

By Edgar Rice Burroughs • Ace Books, New York • No. F-268 • 1964 • 254 pp. • 40¢

In which Ace finishes off its reprints of the Venus series.

THE DOOR INTO SUMMER

By Robert A. Heinlein • Signet Books, New York • No. D-2443 • 1964 • 159 pp. • 50¢

A reissue of one of Heinlein's few time-travel stories.

PODKAYNE OF MARS

By Robert A. Heinlein • Avon Books, New York • No. G-1211 • 1964 • 159 pp. • 50¢

Reprint of Heinlein's juvenile of last year, and a pretty minor one at that.

FOUR FROM PLANET FIVE

By Murray Leinster • Gold Medal Books, New York • No. K-1397 • 1964 • 160 pp. • 40¢

Reissue of the original of 1959 vintage.

I AM LEGEND

By Richard Matheson • Bantam Books, New York • No. J-2744 • 1964 • 122 pp. • 40¢

The original paperback edition came out in 1954—the last man alive in a world of vampires.

THE BEST FROM FANTASY AND SCIENCE FICTION: NINTH SERIES

Edited by Robert P. Mills • Ace Books, New York • No. F-267 • 1964 • 256 pp. • 40¢

This was a vintage year.

THE COSMIC COMPUTER

By H. Beam Piper • Ace Books, New York • No. F-274 • 1964 • 190 pp. • 40¢

New name for "Junkyard Planet," which was another of those alleged juvenile well worth adult attention.

IN THE WET

By Nevil Shute • Ballantine Books, New York • No. U-5004 • 1964 • 255 pp. • 60¢

A strange and neglected novel about an old man who remembers the future breakup of the British Commonwealth.

THE INVINSIBLE MAN

By H. G. Wells • Popular Library, New York • No. K-71 • 1964 • 125 pp. • 40¢

SIRIUS

By Olaf Stapledon • Penquin Books, Baltimore • No. 1999 • 1964 • 188 pp. • 85¢

In England, Penquin apparently publishes a fairly impressive series of science-fiction titles, including some original anthologies, which for obscure reasons are not for sale in the United States. This, Stapledon's novel about a super-intelligent dog and perhaps his best book, seems to be the only exception.

DESTINATION: UNIVERSE!

By A. E. van Vogt • Berkley Books, New York • No. F-893 • 1964 • 160 pp • 50¢

New paperback edition of the 1952 short story collection, with some of van Vogt's best early stories.

CAT'S CRADLE

By Kurt Vonnegut, Jr. • Delta Books, New York • No. 1149 • 1964 • 231 pp. • $1.65

High-priced paperback of one of the strangest yarns in recent years.

TIGER BY THE TAIL

By Alan E. Nourse • MacFadden Books • New York • No. 50-199 • 1964 • 144 pp. • 50¢

Nine stories, two of them from here, out in hard covers in 1961.

THE ISLAND OF DR. MOREAU

By H. G. Wells • Berkley Books, New York • No. C-909 • 1964 • 128 pp. • 45¢

Copyrights must have expired. Now everyone is reprinting Wells.

THE ANALYTICAL LABORATORY

MAY 1964

PLACE	STORY	AUTHOR	POINTS
1.	Undercurrents (Pt. 1)	*James H. Schmitz*	1.74
2.	Once a Cop	*Rick Raphael*	1.86
3.	Hunger	*Christopher Anvil*	3.52
4.	A Niche in Time	*William F. Temple*	3.67
5.	Fair Warning	*John Brunner*	4.11

THE EDITOR

BRASS TACKS

continued from page 5

Such magnificent cities as Tikal and centers such as Palenque are in these jungle areas. The cultures which later developed to the north in Yucatan and the intermediate Puuc areas are not classic Mayan and seem to represent a deteriorating culture. The great calendrical monuments are almost totally found in the jungle areas as is the extensive glyph work. Hence the Maya seem to be a large exception to Mr. Hexter's theory.

One of the most definitive texts on the Maya for those who are interested is "The Ancient Maya"; Sylvanus Griswold Morley, revised by George Brainerd: Stanford University Press, Third edition, 1956. New roads permit driving to many Mayan ruins, even to those in the jungle area in a few cases. I have made the trip and found it of interest. It is best to not go in the heat of summer to Yucatan or you will have it impressed on you forcibly just how hot and dry and windy Chichen Itza really is.

My second bone: Your comments on Roy Tackett's letter shocked me. To state that most formal, university-type experiments in psi are being done in Russia is completely contrary to the facts. Though the Russians have shown interest it would be a gross error to believe that those few researchers engaged in psi research in Russian universities have much support or that what they are doing is widely accepted in Soviet scientific circles. Duke alone far outstrips the amount and value of current Soviet output. The University of Virginia, the University of Texas, St. Joseph's University, New York City College, the University of North Carolina, Oxford, and many other universities in the western world have work in psi coming out of them every year. If you want an idea of the vast amount of research being done in this country compared to Russia, just take a look at the *Journal of Parapsychology* published at Duke University. Being a personal friend of Dr. Rhine and his longtime colleague, Dr. J. G. Pratt—now doing parapsychology at the University of Virginia—and being active in the psi research area myself along with other graduate students at the University of Texas, it seems to me that you have lost touch with the field of parapsychology. I suggest that you give thought to an article on the subject and I further suggest you approach J. G. Pratt to survey the field for you. He has made several trips behind the Iron Curtain and knows the Russian research intimately.

You may not know it, but psi research has made some important strides forward in specifying the conditions under which psi may occur and how it may be induced. I feel sure that it would be of interest to your readers to have Dr. Pratt, as the man closest to western and Russian research, to present a summary of the current state of research.

John O. McCoy

Box 7735
University Station
Austin, Texas

1. Correction accepted. Thanks for the real McCoy on the Mayan-area climate.

2. Too much of the Western psi work is going around in circles, over the same old ground, with very little advance. I note that it was the Russians who first established that some human beings can see with their fingers. And that no Western group has done research on dowsing rods for locating pipes.

Dear Sir:

The 11th of each month is a red letter day in our house! I rise especially early to get to our local newsstand to buy Analog.

I've been reading your science-fiction magazine since I was twelve years old (March, 1956). We have a copy of September 1956—our earliest science-fiction magazine—and it is my favorite type of reading material.

When Analog changed size, so did our book shelf! My mother's been reading science fiction for thirty years now (she started me) and Analog is the only science-fiction magazine she buys steadily.

(I have just finished rereading Mark Phillips' "Occasion For Disaster" which I have read five times and enjoy more each time as I do "That Sweet Little Old Lady." I wish wholeheartedly you could get more of his stories.)

My favorite issue of Analog, however, was June, 1962. Every story in it is worth reading over and over. I never get tired of it! So it stands to reason my favorite story out of all your magazines should be "Novice," by James H. Schmitz. I keep hoping for a sequel but as of yet I have not come across one. I have since read several stories mentioning Jontarou but nothing of Telzey.

So much for my taste! I wish to know if it would be possible to purchase back issues of your magazine providing I pay postage and the price of the magazine.

I sincerely hope so, as I am particularly interested in purchasing April and June of 1960 so I may have the complete novel by Mr. Phillips "Out Like A Light." I know it will be all as funny as "That Sweet Little Old Lady." I should also like a copy of February 1962 which would make a complete set from November 1960—April 1964. I would truly appreciate every effort made to help me in this matter!

I am looking forward very much to next month's issue as I did previously! One other story I especially enjoyed was "Pie Duddle Puddle," March 1964. I couldn't help but regard it as an especially nice birthday present from Analog.

Sue Williams

5002 W. 19th St.
Panama City, Florida

These back issues can be ordered from our Back Issues Department. 1960 magazines cost $1.50 per copy; 1962 magazines cost $.75 per copy.

Dear Mr. Campbell:

I haven't even finished the January issue of Analog. I have read "The Eyes Have It," which is excellent. Then I read "Poppa Needs Shorts."

This is so good that I must stop right now, even though this letter will doubtless come too late for The Analytical Laboratory, and record my vote for "Poppa Needs Shorts" as the best short story I have read for as long as I can remember.

Having now read the rest of the short stories I can list them in order of appeal to me:

(1) Poppa Needs Shorts
(2) The Eyes Have It
(3) See What I Mean
(4) Subjectivity

But every one is FIRST RATE, as is almost always true in Analog these days. I'll bet "Dune World" is too, but I'm *trying* to hold off until the third installment arrives!

Anyway, thanks for wonderful reading—a solid contribution to sanity on the mission field!

Hale H. Cook

P. O. Vadala Mission
Dist. Ahmednagar
Maharashtra, India

Sometimes a short story hits a reader just right—

Dear John:

Re your reply to Mr. Boston in the May issue in which you asked for discussion of the fiction: here's mine.

1. "Undercurrents," by James H. Schmitz. I hope that the conclusion is up to the first installment. This is one of the best, most enjoyable psi yarns I've ever read and I'd like to see more adventures of Telzey Amberdon in Analog. The name was familiar so I dug into my back issues and found "Novice," re-read it and found that I liked it better than I did the first time. I'm a teenager and I find it exhilarating to find that one of us is pulling off such shenanigans and getting away with it.

2. "Once a Cop," by Rick Raphael. It's possible that this was basically better than the JHS story but the writing was not so smooth. I hope that there're other Patrol stories on the way. This series and the one by Winston P. Sanders are some of the most thought-provoking stuff I've found in sf lately. I'm of the opinion though, that their message won't be very much heeded outside of fandom. The woman I ride to classes with is of the opinion that the population explosion is nonsense and even if it's not, it can be solved if only the scientists stop trying to prolong human life. I also find that, among "adults," the problems sf has been considering very, and rightfully, seriously are either unknown to them or under a conspiracy of silence. ("*Shhhhh,* if we don't talk about it, it might go away.")

3. "Fair Warning," by John Brunner. This is one of those stories which stick with you for no particular reason that I can think of at the moment. I like Brunner and I hope you have more of him.

4. "A Niche in Time," by William F. Temple. Very well written but I do think that the reader should have some idea of what's going on before the last page.

5. "Hunger," by Christopher Anvil. Another good story but I found that the action possessed little interest.

May was a good issue as has been the last year's or so. I've been a reader since January 1961 and I think 1963 was the best year in that time.

Whatever happened to Mack Reynolds? And when is he going to write another El Hassan serial? The ending of "Border, Breed Nor Birth" called for another.

One thing I'd like to pass on to you. A friend of mine who goes to a different college sent me a copy of his college paper. I spotted a filler that goes with Reynolds' "Status Quo" or some of the other things I've seen here on the same subject. "When everybody thinks alike, nobody thinks very much."

James E. Turner

Pilot Knob,
Missouri 63663

There's a Mack Reynolds novel scheduled—coming up in the October issue. It's a new one in his series on the Fracas series.

Dear Mr. Campbell:

This is in reference to I. D. Murray's article on smoking and lung cancer, and "The Editors" introduction. It seems that you must have a personal grudge against the AMA. While I agree that they are often seriously wrong in their statements, this was not one of the times. The American Cancer Society, The U. S. Public Health Association, and the U. S. Surgeon General have come to some "loudly stated, but poorly substantiated conclusions," but the AMA has carefully avoided any strong conclusions about the problem.

The article points out some of the difficulties with the studies but overlooks other important items Dr. Hammond, of the American Cancer Society, pointed out in a very well done study reported in the *Scientific American* that there is a definite relationship between inhaling and lung cancer, and the incidence of cancer goes up with the amount of smoke inhaled.

Twenty-five years is not a long time for a significant effect to show up in a biological system. Some hereditary defects do not show up until thirty years or more, such as Huntington's Chorea, Coronary Artery Disease probably starts in the early teens and may not manifest itself until forty-five or fifty. I must agree, though, that there is not very conclusive evidence that smoking is a sufficient cause of cancer of the lung. There are too many cases occurring in non smokers.

One interesting theory is that the arsenic used in spraying tobacco plants causes the cancer. After all the incidence of lung cancer among arsenic miners is several hundred times higher than the incidence among smokers. If this is true, the lung cancer "epidemic" will gradually die out since the growers have switched from arsenic to DDT and other non-arsenic insecticides.

James H. Oliver, Jr., M.D.

1524 Henry
Berkeley, California

Correction accepted; I was mistaken in saying that the A.M.A. had backed up the Surgeon General's conclusions.

The item re arsenical insecticides vs DDT etc. is of interest. Trouble is, as a number of medical men have *pointed out, cancer has been correlated, at various times, with being gassed in WWI, eating fish and shellfish, not eating fish and shellfish, industrial smog, too much ozone in the air in rural areas, and the hairiness of the second phalanx of the fingers and toes.*

One suspects they haven't the foggiest notion what underlies cancer!

Since there is strong evidence that cancer is a stress-associated (we used to say "psychosomatic"!) condition, it may be that tobacco, which has definite relaxant properties, is a cancer preventative that men seek intuitively.

Dear Mr. Campbell:

I. D. Murray's article on the relationships between smoking and lung cancer points out a number of odd things that have not been settled 100%. There is a great possibility that contaminations in the air add to it, and there may be other factors as well. I can't add any solid facts to it, but one day a couple of the local firemen were checking our MSA carbon monoxide detector and one of them tried it on the fumes of a cigarette lighter. The chemical turned extremely dark instantly, the fastest result I have ever seen on one of those. Usual concentrations of CO turn the yellow chemical faint to dark green shades, but this was nearly black!

There might be some tests made on a certain class of retired workmen, namely, the old-time firefighters who worked before the present 02 generator masks and air-tank breathing rigs were common. In those days, a fire department might have one All Service Mask, and they are useless where 02 is less than 16%. The term "Smoke Eaters" arose in those days, when they used to go into a house full of the worst kind of smoke and put out the blaze. If anyone has lung cancers from air pollution, it should be the old-time fireman! There are few people who ever worked in that sort of pollution!

As for the mention of slate workers, it follows that a man working in heavy dust would be more apt to wear a respirator than one at the clean duty of splitting slate. So perhaps the splitters got the most contaminated air, all other factors being equal . . .

I did not smoke before I took up my present work, and I will be damned if I ever do! Too many times some idiot drops a butt into a sofa and it smolders till 2 a.m. and then we get jarred out of bed! I never heard of that happening to tobacco chewers and snuff dippers. Where do they have cancers?

JOHN P. CONLON

52 Columbia Street
Newark, Ohio 43055

Wonder how that CO detector would react at a political convention?

Dear Sir:

Kirton writes a dandy thought-provoking article, but the more I think about it the more gaps I find in my own information, as well as in his.

I'm not well-enough informed to know whether the following assumptions are correct, but from Kirton's article I gather these are the conditions which prevail in the solar system at the present time:

1. If you look down on the earth's north pole, everything in the solar system is rotating counterclockwise—the sun about its axis, the planets about the sun, and the planets about their individual axes.
2. All of the planets are orbiting in substantially the same plane—the same as the earth's orbit, the ecliptic.
3. All axes of rotation—sun and planets—are perpendicular to the plane of the ecliptic except Uranus, which is lying on its side.
   a. The earth's axis is tilted out of perpendicular about 23½ degrees, and precesses in a cone-shape due to a couple exerted on its pot-belly by the sun and the moon together, tending unsuccessfully to set it back perpendicular. However, the axis of the *cone* is perpendicular to the ecliptic.
4. At present, the plane of the ecliptic lies in a radius of the galaxy and contains the galactic axis of rotation.
5. The sun is moving in an orbit around the axis of the galaxy at a rate of 200 million years per revolution, in a path which is at present perpendicular to the plane of the ecliptic, in-line with the sun's axis —so the sun's axis is tangent to its orbit, rather like Uranus at its vernal and autumnal equinoxes.

How am I doing so far? When one person writes and another reads, there is room for communication failure. Here are the new conditions suggested by Kirton, as I understand them:

6. As the sun progresses in its orbit around the galaxy, the plane of the ecliptic is forced to turn so that it continues to lie in a radius of the galaxy and contains the galactic axis of rotation. (The plane of the sun's orbit is perpendicular to the ecliptic and it stays that way.) This means that the ecliptic itself performs one complete revolution every time the sun completes one revolution around the galaxy.
7. But the axes of the solid planets are not shifted from their present orientation in space (with respect to some distant reference points so far away they can be assumed stationary).
8. Since the ecliptic axis changes, but the planet axes do not, the orientation of planets to their orbits changes 360 degrees every 200 million years.
   a. At 90 degrees from here (in 50 million years) the ecliptic will be so tipped that the earth's axis will lie in the plane of the ecliptic as Uranus does now, and Uranus will then be perpendicular.
9. The plane of the Moon's orbit around the earth remains close to the plane of the ecliptic, so that at this 90-degree-from-here point around the galaxy, the moon will be in a polar orbit around the earth, with the various interesting consequences shown in the article.

Now, if I am still on the right track, I have a couple of questions:

A. What happens to the sun's axis of rotation while it moves around the galaxy? (The sun is not a rigid body, it's a big ball of gas.)

1. If the sun retains its present orientation as if it were a rigid body (gyro), then in 50 million years the ecliptic will become a polar orbit to the sun. And what is more, *after* 50 million years the ecliptic will go over the top of the sun so the planets will be orbiting in a direction opposite to the rotation of the sun.
    a. If all the masses were perfectly symmetrical, this might not disturb the orbits, since I don't remember ever hearing that gravity is affected by angular velocities. However, any magnetic field about the sun would be reversed, cutting lines of force like crazy and setting up a back-e.m.f. acting on the magnetic fields of the planets in a direction to slow them down. . . . Unless they flipped their magnetic poles. This would create some *real* fine mountains!
2. If the sun's axis of rotation is pulled around so it remains perpendicular to the ecliptic at all times—not a gyro—then I guess the most it can do is splash.

B. Kirton says—page 81 column 3—that during this 90-degree swing the Moon "must still keep the same face turned toward the earth always . . ." requiring an axial change of the Moon.
Here is a gap in my knowledge—I don't see why. The Moon is a rigid rotating body, isn't it? (Why should the Moon's axis change if nobody *else* does, after *all.*) If there were any force acting to tilt the Moon's axis out of its present orientation then it would surely precess like a gyro instead of meekly tilting to face the earth. If the Moon's orbit stays in the same plane as the ecliptic and swings around with it, and its axis *doesn't* tilt, then we should see not only a tilt, a polar orbit but also the top and bottom of the Moon.

C. If Uranus's present tilt is due only to this re-orientation of the ecliptic going around the galaxy, another suggestion comes to mind—but it only works out if the sun's axis keeps perpendicular to the ecliptic: (A-2 above)
1. If planets are formed by being thrown or pulled off radially from the sun, so they spin in the same direction as the sun, then Uranus might have been formed at a time when its axis was perpendicular to its orbit and its rotation in the same direction as the sun's, which would happen at the 90-degree point in the galactic orbit—90 degrees from here.
2. It would be a check of Kirton's theory if the age of Uranus could be established as 50 million—plus or minus 200-million—years older than the rest of the planets.

D. One more question: also on page 81 column 3 Kirton thinks that the sun's galactic orbit is a long ellipse "because full ice-ages seem to occur only once per revolution of the galaxy instead of twice," meaning it's colder at the far end.
I don't get the connection. Earth gets its heat from the sun, not from the center of the galaxy. Does the sun's distance from the center of the galaxy affect the temperature of the sun? Does it increase the distance of the sun from the earth? Or what?

Well, thanks for reading all this way; thanks for printing Kirton's article, and thanks for putting out a top-notch magazine.

(Mrs.) Polly Ryan

1745 Vine Street
Berkeley 3, California.

I agree in full that there's lots to think about—which is why I published the article. I do not have answers!

Dear Mr. Campbell:

I was much intrigued by the article in the May issue of Analog by J. P. Kirton on "The Problem of The Gyroscopic Earth" and think it contains a suggestion about the possible connection between galactic dynamics and the geological history of the earth which is worth following up. However, it cannot be correct in the form presented because it is in conflict with an *observational* fact which I thought was well known. This fact is that the earth's poles are *not* "locked in space," but precess about the perpendicular to the plane of the ecliptic with a period of 26,000 years.

To quote from T. S. Kuhn (in "The Copernican Revolution," Modern Library Paperbacks, Random House, New York, 1957, p. 269): "The precessional motion seems to have been noticed first by the Hellenistic astronomer Hipparcus during the Second Century B.C., and, though not widely known at first, it was discussed by a number of subsequent astronomers, including Ptolemy." Incidentally, readers of Analog not already familiar with this delightful book, would find it valuable, not only for its discussion of the devious historical process of how the current astronomical orthodoxy came to be accepted, but also for its straightforward description of the facts behind the development.

The phenomenon was first given a qualitative physical explanation by Newton as due to the combined action of the gravitational fields of the sun and moon on the tidal bulges at the earth's equator producing gyroscopic precession of the spinning earth. By now the calculated effect can be brought into reasonable agreement with observation if due account is taken of the *lack* of complete rigidity of the earth.

I agree with Kirton that the fact that the plane of the ecliptic contains the galactic nucleus is probably not an accident, and that the most likely hypothesis is that this relationship is maintained during the rotation of the solar system about the nucleus. This requires a torque to change the angular momentum of the orbits of the planets about the sun, which could conceivably be supplied by the magnetic forces he invokes. However, these would be expected to act in different ways on different planets because of their very different internal structures and chemical compositions; hence a more likely mechanism would be a gravitational effect which maintains the approximate alignment of the planes of the planetary orbits in a uniform way. Such a mechanism *might* maintain the 23½° inclination of the earth's axis from the perpendicular to the plane of the ecliptic, since the precessional period of 26,000 years is short compared to the postulated 50 million years needed to change the ecliptic by 90°. On the other hand, it might produce a secular change in this angle and lead to the geophysical consequences envisaged by Kirton.

It is clear, however, that the geometrical argument given by Kirton is insufficient to decide the question, and that a dynamical theory which specified the torque acting on the spinning planets as well as on their orbit planes is needed before a firm conclusion can be drawn.

H. PIERRE NOYES

823 Lathrop Drive,
Stanford, California

Captain Kirton is well aware of the precessional effects; since the 25,000 year precession is so short a period compared to the 200,000,000 year galactic period, his analysis actually referred to the fixed axis-of-polar-precession, rather than the polar axis itself.

Dear John,

The tough thing about the idea of evolution is the interminable eons required for a change to take place. Natural selection seems so slow that we could run out of years in spite of having all those billions to work with.

I should like to propose a modification to the theory which will speed the theoretical process up significantly. It may not be a new idea, but I thought it up myself and it is new to me. In fact, I got it from seeing a cottontail rabbit run across the highway.

Suppose we supplement the idea of sports, of a constant flow of new variants on an existing type, by providing a steady series of catastrophes to interact with it. Major catastrophes, such as ice ages, floods, volcanic eruptions, et cetera.

In a heterogeneous population in an undemanding environment sports may disappear as casually as they appear. There will be little tendency for them to interbreed to form a new strain.

But, if a catastrophe cuts the whole population down by a factor of a thousand or a million, the remaining small population will contain a greatly increased fraction of sports best fitted to survive. Moreover, there will be a great increase in the frequency with which the sports breed with each other, and greater likelihood of a new, hardy strain emerging—hardy with respect to that one type of catastrophe, of course.

The white man was a catastrophe to the Amerind, but he is coming back as a race who can live with the white man, and ultimately one which can assimilate with him.

The automobile is such a catastrophe to the cottontail rabbit in our metropolitan areas, and I think that these areas will produce a strain of rabbits able to avoid highway death.

It's the catastrophe which accelerates evolution into a positively workable system for refining the breed.

DONALD H. ROGERS

Corner Gough and Dubois Aves.
Ivyland, Pa.

Fifty years ago, a Sunday drive by automobile usually meant killing one or two chickens en route. The old crack about "Why does a chicken cross a road?" had point, meaning, and—particularly to farmers—poignancy.

Today, there exists a breed of chickens that do not attempt to cross roads in front of automobiles. The existence of cars has selectively bred a type of chicken with far superior capabilities in its trajectory-computer section of the brain. Much higher computer-function rate in real-time computation; it now gets right answers when velocities as high as 80 mph are involved.

It is some question whether these effects can be called "catastrophes," however. Since history is always written entirely by the survivors, they tend to come out "fortunate events that lead to our present domination . . ."

THE BARBARIAN MENACE

continued from page 7

a given fertile egg can be developed into a sexless worker if fed in one way, or into a queen, if fed a different diet. Here, both physiological and behavioral patterns are seemingly determined by the diet.

Obviously, they're not; the diet doesn't carry that much information! It's a lot closer to having a record that, played one side up produces the pattern "The Pines of Rome," while, played the other side up, displays the sound-pattern of "Hungarian Rhapsody." There is, in the bee egg, a dual potential; which potential is developed into activity can be influenced—but the potential itself is genetically determined.

What we need at this point is a somewhat more precise meaning of the term "barbarian." The origin of the term stems from the old Greek conviction that anyone who didn't speak Hellenistic Greek was less-than-human—that the aliens didn't really speak, any more than dogs or chickens did. They just made mouth noises like *bar-bar-bar*, and were called *barbarians.*

So the original meaning of the term was simply "Somebody who doesn't speak Hellenistic Greek." This means the world today is populated entirely by barbarians.

Later, it meant "Any people whose culture and ways of life I disapprove of—that is, anyone who doesn't live The Only Right Way—my way!"

That's a very minor modification of the Greek meaning. It did, however, allow that someone who spoke perfect Greek could be a barbarian. This meant that, as any Athenian could clearly recognize, Spartans were barbarians, even though they did speak Greek.

To a very large extent, the term "barbarian" is used today in precisely that way; it has no precise meaning, and is solely a term of disparagement, a term of insult.

I want to make a precise definition

of the term, one that will make it useful in discussion—which no vague, variable-referent term can be.

Let me hasten to point out that vague, variable-referent terms can be extremely *satisfying* in discussion; they simply aren't *useful.* That is, if we have "barbarian" as a vague, variable-referent term meaning "someone whose manners, customs, appearance, language, or values I dislike because they are unlike mine," then if I say, "I don't like that man," and you ask me why, I can, with satisfying sense of conviction and completion, say "Because he's a barbarian!"

This is very satisfying; it gives one the impression he has said something meaningful in explanation of his dislike. That he has made a profound, and definitive statement. It's satisfying.

It's also perfectly circular. "I don't like him because he acts in a way I dislike."

Let's try something more definitive, and acultural—use actual, observable behavior characteristics, as describing the barbarian. Animal species can be defined in terms of behavior characteristics, as well as in terms of physiology; so can human types. Some animals are carnivorous; some, although perfectly capable of digesting meat, never eat it. These behavioral characteristics are perfectly definable and observable.

First, there is the Tribal type—the earliest human-cultural evolution. The term "savage" can be reserved for the pre-cultural level, the level when humanoids wandered about in family groupings, as do chimpanzees and gorillas today.

The Tribal type evolved through the evolution of Tribal cultures; the human type and the cultural structure were, of course, co-evolving as a feedback-interacting system. The resultant human type is characterized by rejection of creativity, and by complete rejection of personal responsibility. The Tribal rituals determine all Right Living Ways; he is not responsible for anything, so long as he follows the commands of the Tribal rituals. He accepts external command—and is rewarded with security. If he obeys the Tribal rituals, the tribe will defend and protect him.

The Tribal type readily accepts slavery; the Master simply replaces the Tribal rituals. The Master now gives the commands, which the slave—better, actually, is the term "serf"—obeys faithfully, and the Master rewards the Tribal individual with security, freedom from responsibility, and the benefits accruing from sharing the higher standard of living the wiser Master can produce.

In Tribal culture, the cultural system is wiser than the individuals, and precisely that situation above described results. The tribesmen don't know why the rituals are what they are, nor do they feel they need to understand; they need only carry out the orders of traditions, and they will benefit from the greater wisdom of the ages.

The second major stage of cultural evolution came with the rise of the barbarian.

The primary change came in the fact that the barbarian accepted personal responsibility. The consequences of that are very complex, very interesting, and pure dynamite culturally. Since he takes personal responsibility —he won't take orders. He won't obey the rituals; if he does something somebody else tells him to, he does it not because he's ordered to, but because he believes, himself, that doing it is a good idea.

With the rise of personal reponsibility came, as an obvious consequence, what we know as Honor, personal honor. A tribesman doesn't have personal honor, because he doesn't have personal responsibility; breaking tribal taboos is evil, sinful—not dishonorable.

Every organism must seek survival of its type; if it doesn't, it is of no importance whatever in the scheme of things. For it's not long for this world, if it doesn't seek survival! "Security" is a generalized term, essentially meaning simply a sense that survival is assured. Where the Tribal type found security in the ancient, stable, wisdom of the rituals—or finds it in a Master who orders him, and takes responsibility for him—the barbarian is his own source of security.

Actually, of course, a sense of security has nothing whatever to do with actual safety. For example, there's nothing like a good, solid lethal dose of morphine to make a man's worries and fears ease away. A cat might well curl up comfortably on a nice, warm mass of radioactive matter, thermally content while the gamma radiation tore it to pieces.

The barbarian takes personal responsibility—and his security lies in the absolute, unshakable certainty that he is Right, Wise, and Capable.

This makes it exceedingly difficult to teach him a damn thing. Since he's already Right, obviously he has nothing to learn—and if he isn't right, you've just destroyed his sense of security. To accept that insecurity means, to him, that he is lost without direction, without a way to recover himself.

He has a strong sense of *personal* responsibility . . . but no great sense of responsibility for others. Fellow barbarians not only don't ask him to take care of them, they'll damn well kill him if he tries to take them over. And you *can not be responsible for something, or someone, you have no control over.*

The barbarian type evolved, and evolved civilizations. They demean the tribal type—those cowardly, subhuman slaves, who will take orders from another man! They know that they, and only they, are Right and Wise.

Characteristically, the barbarian *cannot* work for a living. It's psychologically impossible for him. He can, and will, fight for something he wants; that's honorable. Any form or variation of fighting is good, honorable, and manly. He can fight with swords, spears, or machine guns, or with arguments, or schemes and plots. He can get what he wants by threats, blackmail, extortion, or gift. (Which he considers a form of extortion; obviously the giver feared him and his power.) He can plot, scheme, and labor at a plan to gain his ends—but he cannot work for it.

He can risk life, health, or crippling, labor twenty hours a day for weeks digging a tunnel to penetrate to someone else's treasurehouse; that is honorable, manly, tolerable because it's a form of fighting. But he can't work in a mine to dig out gold from Nature's treasurehouse; that's unmanly, demeaning *work*. Work is what slaves and women do. An honorable man can hunt, fight, and plot—but not work for economic productive ends. Only slaves and women do that.

The European nobility, until relatively recently, held precisely that attitude; it was demeaning and dishonorable for a nobleman to engage in trade—i.e., to do anything economically productive.

The American Indians, when white men first arrived in the United States area, were true barbarians. They did not, *and could not*, work for a living. The colonists confused them acutely, because they worked for a living . . . and a few preliminary skirmishes established very definitely that the colonists were not cowardly weaklings, not the demeaned slave type.

The colonists, however, found that the North American Indians could not be enslaved; the Spanish tried it, and were murdered for their pains. In the United States central and eastern areas that is; in the Mexican-to-Chilean areas, the Indians had advanced to the third stage of cultural evolution—the citizen stage—and could be enslaved. Because a citizen can work for a living, and be creative, and be responsible for himself.

So the primary characteristics of the barbarian are that he is intransigently sure of his unarguable rightness, and that he cannot work for a living, but can only fight—in one variant form or another—for what he wants.

The third level of cultural evolution so far is the citizen; he differs from the barbarian thanks, largely, to the barbarian's millennia of tutelage in "How To Learn a New Way Of Life . . . or Die!" The Citizen is marked by a flexibility of thought, of value systems, and of learning-processes that the barbarian doesn't have. The citizen can work for a living—he can be economically productive. (The barbarian can be an artist or an armorer, incidentally, but not, for example, a farmer, a machinist, or a chemist. The artist is expressing his own opinion; the armorer is making the sword he plans to use.)

The citizen is able to consider and evaluate someone else's ideas, as well as his own. He not only has a sense of responsibility for himself, but feels responsible also for others. And the citizen is the first level of humanoid that has been able to *live with a sense of insecurity*. He can think, and *not be sure his thinking is necessarily right.* This is what makes it possible for even an adult citizen to learn an entirely new way of life, even one he does not want.

Now comes the truly important problem—the true Menace of the Barbarian today.

The Barbarian is not adaptable, has no sense of responsibility for anyone else, and wants to fight, not work, for a living.

A barbarian is *not* necessarily a stupid lout by any means. That behavior pattern can apply to any individual, without distinction as to race, creed, color, or I.Q. The barbarian can be enormously intelligent . . . and still be a barbarian as specifically defined by the behavior pattern given above.

Perhaps the all-time high example of a true, high-intelligence barbarian was Socrates. That may sound outrageous—but run it over for data! Socrates *would not* work for a living; his wife and children got along as best they could, for he had very small sense of responsibility toward others. (A man can *talk* a fine game, and not be able to play it at all. I learned a lot about the fundamental nature of ethics, morality, and honesty from a man who's an amoral psychopath; he could consider these matters with a degree of objective detachment I hope never to achieve.) Socrates could fight endlessly—argumentatively, or as a warrior against Sparta. But he did not engage in any economically productive activity, except bumming from his friends. He was intransigently and unshakably certain he was right; he "had a demon who told him" when he was right.

Socrates showed every characteristic of the true barbarian personality pattern—and the fact that he was enormously intelligent has nothing to do with that fact.

On the other hand, Aesop, who was a slave, showed the pattern of the true citizen. He was highly intelligent also—but that is a completely independent variable; citizens can be low-grade morons, or ultra-high geniuses. Aesop, however, could adopt many viewpoints, many value-systems, as he did in his fables. And he could accept slavery, and still remain mentally sound and accomplish things.

The barbarian is the greatest menace to civilization today because he is inside, not outside, the culture. The barbarian can be intelligent, can plot and manipulate with immense skill . . . and utter self-centered trickiness. He has a strong sense of personal honor—which includes the honorableness of being too tricky for your opponents to trap. The barbarian's sense of honor is powerfully dominant over his actions—he will kill himself for honor. But it doesn't happen to include honesty as part of honor.

Honor, to him, is achieving a high standard of living by fighting for it; dishonor is working for a living. (This may be a very subtle point to an outsider; Socrates would have been able to teach at a university without considering that he was demeaning himself by working—but wouldn't have been able to accept a job with a corporation as a mathematician.) A shyster lawyer can be a barbarian; typically, to him, the law is a system of strings with which to weave traps for others.

THE BARBARIAN MENACE

The menace arises from this factor; he has a sense of honor, but no sense of ethics, and no adaptability. The citizen is the type that builds civilization; the type that can work productively, can adapt his views so that he can integrate and work with others who have different viewpoints, different ways of life, different value systems.

The citizen *can adapt.*

The barbarian *can't adapt.*

When citizen and barbarian come into conflict within a culture—it is inevitable that *the citizen will tend to adapt to the barbarian because he, alone of the two, can adapt.*

The citizen will learn barbarian manners from the barbarian; the barbarian will learn nothing from the citizen.

But the barbarian will learn how to defeat his enemies—the citizens. He'll learn how they can be tricked, cozened, argued into corners, and conned into nonsense. He, who doesn't have any sense of responsibility for others, will keep assuring the citizen that *he* must feel responsible for others.

The barbarian won't work—and will insist to the citizen that citizens should feel responsible for the unemployed barbarian, and should support him in the style he'd like to become accustomed to.

Hitler was a barbarian; the Anglo-French leaders were citizens, and were conned into giving up Czechoslovakia, in 1938.

However . . . Churchill was a citizen, too—and when a citizen refuses to be conned, recognizes the barbarian as inherently incapable of productive effort, co-operation, or adaptation, the citizen's greater range of abilities can fairly surely destroy him.

The barbarian wants to fight for a living; he likes life only in those terms.

The citizen is a past-master barbarian; he's gone through that stage. He *can* fight—if he realizes that that is the necessary answer to the intransigent, self-centered, honorable-but-dishonest barbarian.

The great menace of the barbarian is that the citizen *can* adapt to the barbarian—and civilization, which depends on citizens, disintegrates shortly afterwards.

The Tribal type, a civilization can use; the tribal pattern individual will work, and work honestly and faithfully. He is not creative; he seeks the security of routine and tradition. But remember, these personality pattern types have *no correlation whatever with intelligence, race, color, creed, or physical shape*, because they are *individual* characteristics. (Race does enter—but solely on a statistical basis. Cultural evolution, remember, acts as a selective breeding mechanism, and produces a strong selection of statistics in the resultant group. Such a selected group will *not* show a Gaussian distribution, naturally!)

One can find a pure tribal-pattern individual with an I.Q. of 175, a professor at a University, where he is patiently, faithfully, and competently carrying on the highly intellectual traditions of his scholarly field. He's still a tribal type, however intellectual a tribesman he may be! He will have the virtues of loyalty, honesty, and patience—but will be entirely noncreative, and will oppose all suggestions of change in the traditions and rituals of the University or the field he is engaged in.

Or the highly intelligent tribesman type may be a chemist, doing quality-control analyses, checking to see that the company product does in fact meet ASTM standards test #237-B-2, or the relevant MIL specs. Here, his inherent lack of creativity is one of the highly desirable features of his nature; when a man is supposed to check something against an established standard test, originality, creativity, and ingenuity are the last things wanted! The new, shorter, and easier test he invents may be wonderful—but it is *not* ASTM standards test #237-B-2, which is what the contract calls for!

A citizen could do the quality control job, because he can appreciate the necessity of the noncreative viewpoint, and adapt to it. He'll be uncomfortable, though, because in such work he'd be using less than his full potential.

The one who absolutely could not carry out the job would be the barbarian personality; being rigidly limited by someone else's orders is dishonor, it's intolerable . . . he'll break out because he *can't* work that way.

The menace of the barbarian lies in his intransigence, coupled with high intelligence, argumentative persuasiveness, and pleasure in fighting. The citizen, because he is adaptable, will gradually adapt to the barbarian's intransigent demands, because the citizen cannot continually fight off the barbarian and accomplish the productive things the citizen yearns to achieve.

The citizen fights only to accomplish; the barbarian fights to enjoy the fight and to win. In argument, the citizen seeks to find the truth—the barbarian seeks only to win. The barbarian has an intense sense of honor—and neither honesty nor truthfulness, morality nor ethics. But he will call upon the citizen to be moral, ethical, honest and truthful continually.

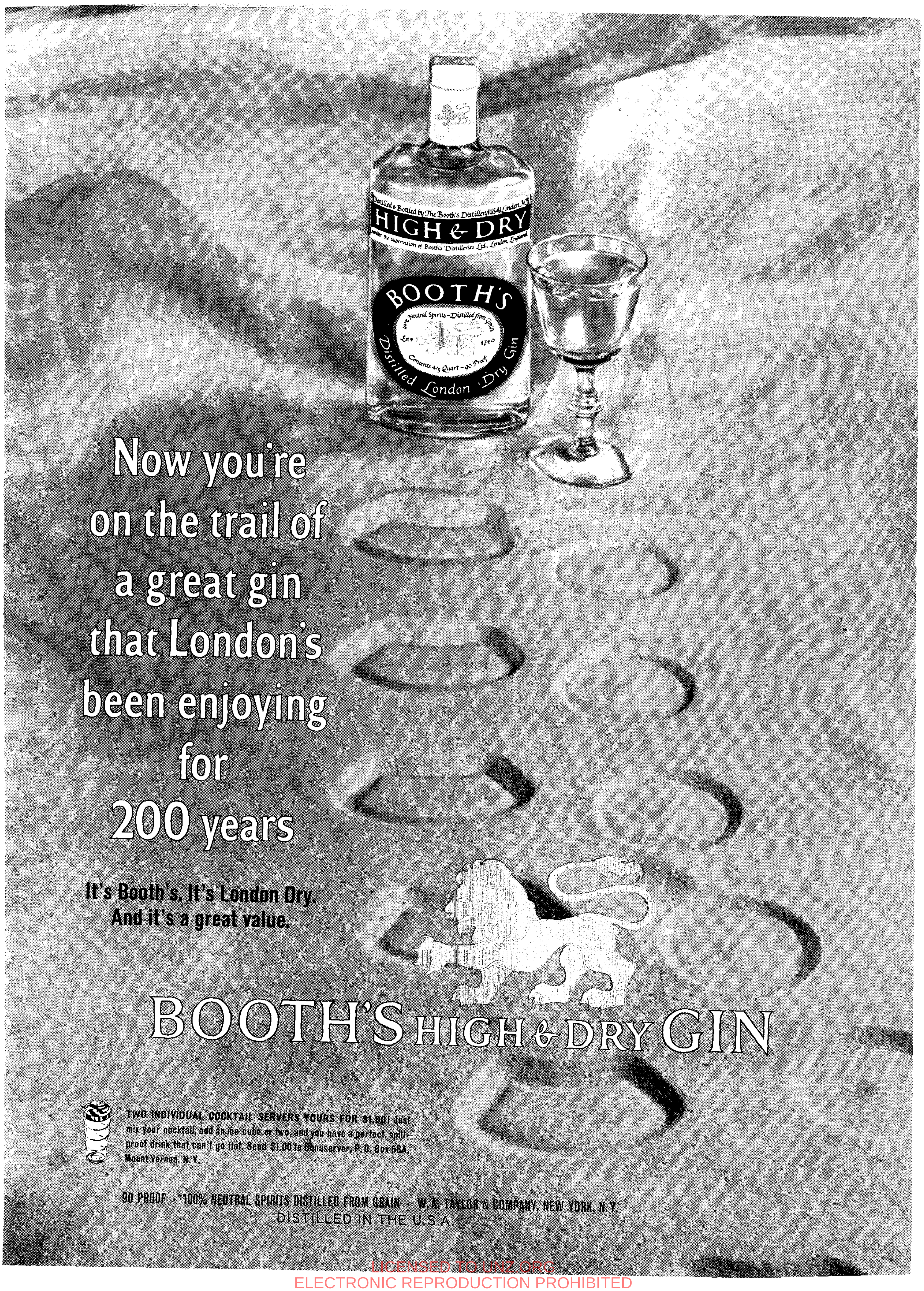
The barbarian well knows that the best weapon to use is one that can hurt your opponent—but which cannot touch you.

Until the citizen realizes that self-defense is not only an ethical right, *but also an ethical duty*, he will yield to the barbarian simply because he *can* adapt.

The simplest sign of barbarism is the characteristic that they will *demand*, on moral-ethical grounds, that they be *given* something they claim as rights, but will not accept that it must be *earned*, must be *worked* for. They will threaten to fight for it, and will fight for what they want—but will not work productively to earn it.

The essence of the barbarian approach was boiled down very neatly in Hitler's cry of "Guns before butter!"

Guns are to fight with; butter is fuel for hard work. ■ THE EDITOR.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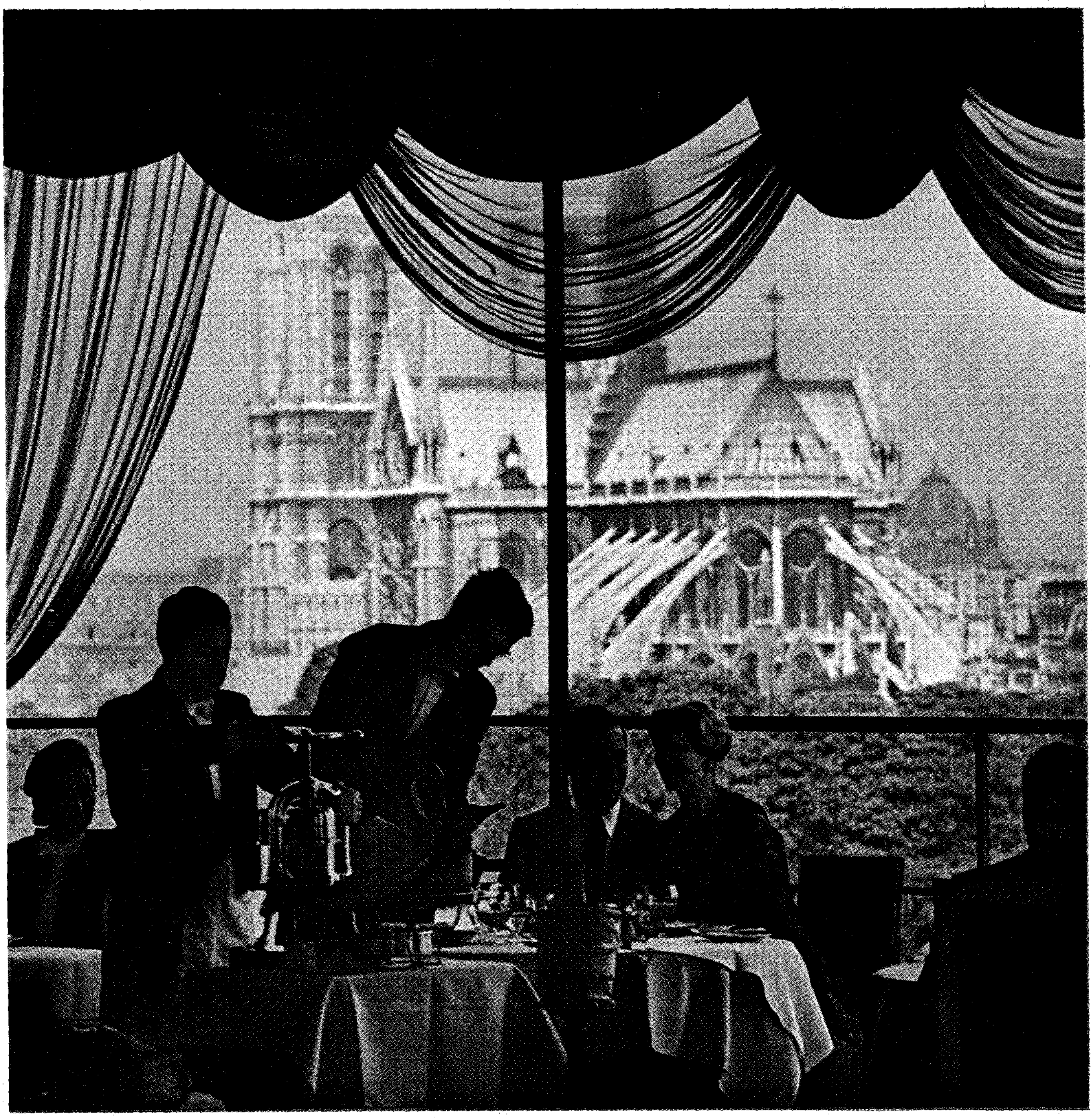

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